Chroma

SMPS ATS
8000
User's Manual

Version 1.7
January 2008
P/N A11 000167

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Material Contents Declaration

A regulatory requirement of The People's Republic of China defined by specification SJ/T 11364-2006 mandates that manufacturers provide material contents declaration of electronic products, and for Chroma products are as below:

Part Name	Hazardous Substances					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyls	Polybromodiphenyl Ethers
	Pb	Hg	Cd	Cr^{6+}	PBB	PBDE
PCBA	×	O	O	O	O	O
CHASSIS	×	O	O	O	O	O
ACCESSORY	×	O	O	O	O	O
PACKAGE	O	O	O	O	O	O

"O" indicates that the level of the specified chemical substance is less than the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.
"×" indicates that the level of the specified chemical substance exceeds the threshold level specified in the standards of SJ/T-11363-2006 and EU 2005/618/EC.

1. Chroma is not fully transitioned to lead-free solder assembly at this moment; however, most of the components used are RoHS compliant.
2. The environment-friendly usage period of the product is assumed under the operating environment specified in each product's specification.

Disposal

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities. Contact your local government for information regarding the collection systems available. If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being. When replacing old appliances with new one, the retailer is legally obligated to take back your old appliances for disposal at least for free of charge.

Revision History

The following lists the additions, deletions and modifications in this manual at each revision.

Date	Version	Revised Sections
Apr. 2003	1.1	Modify the "*Managing System Available Resources*" chapter to add "*Fixture ID*" and "*Net Extension*" functions. Modify the "*Editing Test Program*" chapter to remove "*Universal TP*" function. Modify the "*Statistics Process Control (Option)*" chapter Modify the "*Report Wizard (Option)*" chapter Modify the "*On-line Control (Option)*" chapter
Jul. 2003	1.2	Modify the "*System Installation*" chapter to remove NI CVI Runtime Engine and add system restart notice after installed Hasp Driver in Windows 98 OS.
Feb. 2004	1.3	Modify the "*System Installation*" chapter to change the 8000 SMPS ATS main screen. Modify the "*Editing Test Program*" chapter to add the Universal Test Program. Modify the "*Executing Test Program (GO/NOGO)*" chapter to add the Universal Test Program. Modify the "*System Controller*" section to change 64MB to 512MB. Modify the "*Software System Requirements*" section to support Windows XP and change 64MB to 512MB.
Mar. 2005	1.4	Modify the "*System Installation*" chapter to change the first screen of 8000 SMPS ATS installation. Modify the "*Hardware Configuration*" chapter to change the amount of loading connections to 12.
Oct. 2006	1.5	Modify "*System Installation*" chapter to change the main screen of 8000 SMPS ATS. Modify "*Executing Test Program (GO/NOGO)*" chapter to add the description of new function.
Mar. 2007	1.6	Add "*Material Contents Declaration*".
Jan. 2008	1.7	Modify "*Hardware Configuration*" chapter to add a new communication interface. Modify "*Executing Test Program (GO/NOGO)*" chapter to add Multi-UUT Barcode prescan function. Modify "*Report Generator"* chapter to add UUT filter function for offline report. Modify "*Managing System Available Resources*" chapter to add test items classification for new group function.

Modify "*Editing User Defined Test Item (Option)*" chapter to add a test item group and security setting.
Modify "*Statistics Process Control (Option)*" chapter to add variables selection wizard.

Table of Contents

Preface

About this manual

This manual is to guide you how to use Chroma 8000 Automatic Test System (ATS) to test the Switch Mode Power Supply, as well as the features and functions of automatic tests. We suggest you to read this manual following the chapter sequence. In order to perform the activities described effectively, we also recommend you to have the basic operation knowledge of Windows.

Manual Contents

Chapter 1	System Architecture This chapter explains the system architecture of Chroma 8000 ATS and what it is composed of along with the Switch Mode Power Supply ATS software (SMPS) functions and system features.
Chapter 2	System Installation This chapter tells you how to install Chroma 8000 ATS.
Chapter 3	Basic Operation This chapter shows you how to use SMPS ATS software quickly.
Chapter 4	Hardware Configuration This chapter teaches you how to set the configuration of the instruments in the ATS for effective testing work.
Chapter 5	Editing Test Program This chapter explains what the test program is composed of and how to edit the test program to meet your needs.
Chapter 6	Verifying Test Program and Test Item This chapter covers the contents of how SMPS ATS software verifies the test programs and test items.
Chapter 7	Executing Test Program (GO/NOGO) This chapter describes how SMPS ATS software executes the test programs and how to set up the execution environment according to your needs.

Chapter 8	Editing Report Format This chapter explains how to edit the report format.
Chapter 9	Report Generator This chapter shows you how to create, inquire, save and print the test result in the program.
Chapter 10	Managing System Available Resources This chapter describes how to set up a user account and its permission to control the access personnel effectively, and execute the test program, test item and import/export function of an instrument device.
Chapter 11	Editing User Defined Test Item (Option) This chapter introduces the features and usage of the user defined test items provided by SMPS ATS software in detail.
Chapter 12	Statistics Process Control (Option) This chapter clearly introduces how to use the statistics drawing function to create the statistic process control graphics.
Chapter 13	Report Wizard (Option) This chapter describes how to export the saved test data (graphics or text) to Microsoft Word.
Chapter 14	On-line Control (Option) This chapter tells you how to use this program to integrate the devices in the system and simulate the tests manually.
Appendix A	Test Result Log File It describes the contents of test result log.
Appendix B	Contact Chroma It includes the information of how to contact Chroma for software and hardware services as well as a reader comments form for your comments and recommendations.

Conventions

Following conventions are used in this manual.

Bold	Indicates the function keys, push buttons, and input/output parameters.
Italic	Indicates the important notices and references for manuals or documents.
Italic Bold	Users can use the program to check, save and print the test results.
`Courier New`	Indicates the text you need to enter such as the driver ID, path, directory and execution program name when using the program to check, save and print the test results.
‘ ’	Indicates the active window or program.
	Indicates the push button.
[ ]→[ ]	Menu items.
{}	Data list.

1. System Architecture

This chapter describes the architecture and composite of Chroma 8000 Switch Mode Power Supply Automatic Test System with detail explanations of Switch Mode Power Supply ATS software (SMPS ATS software) main features. Following listed are the system requirements to help you understand the environment you need.

1.1 Introduction

Chroma 8000 Automatic Test System is a system that integrates various instruments for Switch Mode Power Supply tests. It is structured under the open software environment and designed specially for testing Switch Mode Power Supplies. The ATS has the following features.

- Integrating various programmable instruments to provide a total solution operating environment for easy and efficient use.
- Providing a complete test program development environment for users to write or modify the test program also activates the debugging function to check its correctness.
- Modular and flexible architecture makes the system easy to upgrade and expand.
- Adopting the Graphics User Interface (Windows 98, Windows 2000 or Windows NT environment), which makes the program very user friendly.
- Supporting standard interface IEEE-488, RS-232C and I^2C.
- Providing default test items and allowing users to develop the one they need.

1.2 Hardware Architecture

Chroma 8000 Switch Mode Power Supply Automatic Test System should contain the following hardware devices:

- System Controller, an IPC (Industrial PC and Peripherals), see section 1.2.1 for its functions and specifications.
- Programmable AC Source, see section 1.2.2 for its functions and specifications.
- Programmable DC Source, see section 1.2.3 for its functions and specifications.
- Power Analyzer (PA), see section 1.2.4 for its functions and specifications.
- DC Electronic Load, see section 1.2.5 for its functions and specifications.
- Digital Storage Oscilloscope (DSO), see section 1.2.6 for its functions and specifications.
- Digital Multi-Meter (DMM), see section 1.2.7 for its functions and specifications.
- Timing/Noise Analyzer, see section 1.2.8 for its functions and specifications.
- Over Voltage Protection and Short Circuit Tester (OVP/Short Circuit Tester), see section 1.2.9 for its functions and specifications.
- Power ON/OFF Controller, see section 1.2.10 for its functions and specifications.
- Extended module, see section 1.2.11 for its functions and specifications.
- Frame: The 19" standard chassis for all hardware devices installation.
- Test fixture: To connect Chroma 8000 SMPS ATS and UUT. As the UUT is different from each other, the fixture needs to be customized as per request.
- Test table: The table for putting the UUT and computer peripherals, and generally provided by user.

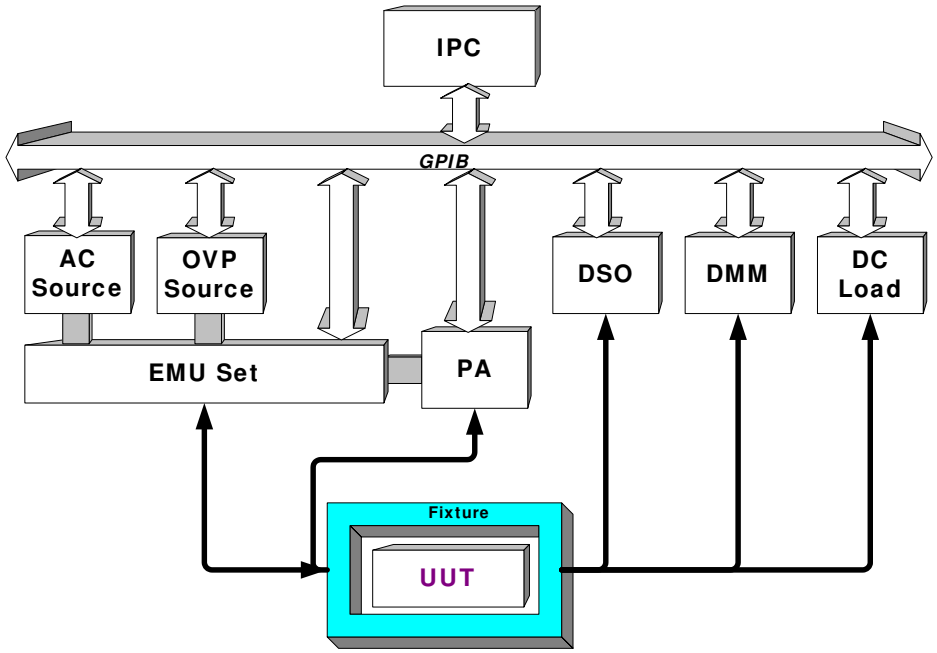
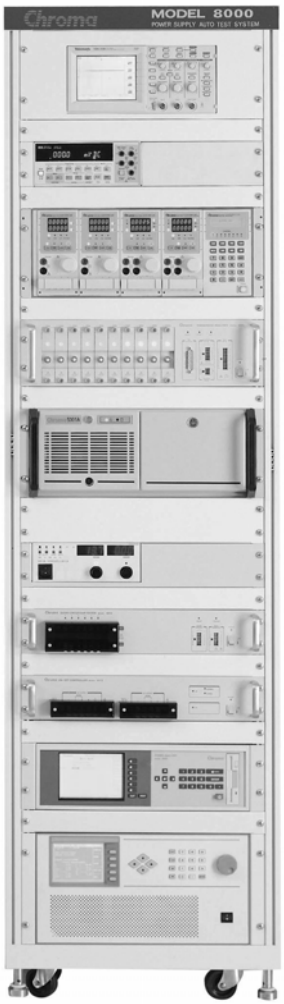


Figure1-1 Chroma 8000 Hardware Logic Diagram



Digital Storage Osc. Scope

Digital Multi-Meter

DC Electronic Load

Timing/Noise Analyzer

Industrial PC

Programmable DC Power Supply

OVP/Short Circuit Tester

ON/OFF Controller

Power Analyzer

Programmable AC Source

Figure1-2 System Outline

1.2.1 System Controller (Industrial PC & Peripheral)

- **Central Control Computer:**
  Central Control Computer is the center of Chroma 8000 SMPS ATS. It controls various instruments to execute tests and examine the test results; also to save, display,

print and analyze the data as well as provide users the operating interfaces. The hardware requirements are as below:

- Intel CPU 500MHz or above
- 8.3GB hard disk drive or above
- 512MB memory or above
- 3.5" floppy disk
- 40 speed CD drive or above
- SVGA monitor (min. resolution 800x 600)
- Keyboard
- PS2 mouse
- At least 3 slots available for DIO and GPIB cards
- Parallel printer port

- **Peripheral:**
  The peripheral is for test results printout.
  - Parallel printer— for detail data printing use.

1.2.2 Programmable AC Source

A Programmable AC Source is to provide the input power for UUT and simulate various input power situations. So, it must have enough power, changeable voltage and frequency to fulfill the input requirements of a power supply.

Chroma 8000 SMPS ATS supports the programmable AC Source manufactured by Chroma. For the models supported please refer to the 'H/W Configuration' in the system software. As to the detail specifications and operations of AC Source, please see its user's manual.

1.2.3 Programmable DC Source

A Programmable DC Source is to provide extra power to test the over voltage protection function. It must be able to provide the voltage that larger than the UUT output for over voltage protection.

Chroma 8000 SMPS ATS supports the programmable DC Source manufactured by Chroma. For the models supported please refer to the 'H/W Configuration' in the system software. As to the detail specifications and operations of DC Source, please see its user's manual.

1.2.4 Power Analyzer

Power Analyzer is to calculate the UUT's efficiency by measuring the various parameters of voltage, current, power, frequency, power factor and total harmonic distortion from the UUT's input comparing to its output.

Chroma 8000 SMPS ATS supports the Power Analyzer manufactured by Chroma. For the models supported please refer to the 'H/W Configuration' in the system software. As to the detail specifications and operations of Power Analyzer, please see its user's manual.

1.2.5 DC Electronic Load

A DC Electronic Load is to simulate the load changes and other status on the UUT when running tests so that they can be close to reality.

Chroma 8000 SMPS ATS supports the DC Load manufactured by Chroma. For the models supported please refer to the 'H/W Configuration' in the system software. As to the detail specifications and operations of DC Load, please see its user's manual.

1.2.6 Digital Storage Oscilloscope

Digital Storage Oscilloscope is to measure and save the UUT's output voltage waveform for data analysis. In SMPS ATS, the default function for load adjust rate (load effect) characteristic test uses the Digital Storage Oscilloscope to measure the output voltage waveform and calculate the result after saving it.

Chroma 8000 SMPS ATS supports the Tektronix TDS 3012 Digitizing Oscilloscopes. For the detail specifications and operations of Tektronix TDS 3012 Digitizing Oscilloscopes, please see its user's manual.

1.2.7 Digital Multi-Meter

Digital Multi-Meter is to measure the voltage, current and resistance. In SMPS ATS, Digital Multi-Meter is to measure the UUT's reverse current.

Chroma 8000 SMPS ATS supports the Agilent/ HP 34401A Multimeter. For detail specifications and operation of Agilent/HP 34401A Multimeter, please refer to its user's manual.

1.2.8 Timing/Noise Analyzer

Chroma 8000 SMPS ATS uses the unique Timing/Noise Analyzer - Chroma 6011, which is able to expand up to 10 input measurement modules and every module can measure the timing and noise potential. In addition, it also provides TTL signal and floating point relay to execute the external circuit control.

For detail specifications and operation of Chroma 6011 Timing/Noise Analyzer, please refer to its user's manual.

1.2.9 OVP/Short Circuit Tester

Chroma 6012 Over Voltage Protection can simulate OV/UV and short circuit situations to make power supply tests more convenient.

For detail specifications and operation of Chroma 6012 OVP/Short Circuit Tester, please refer to its user's manual.

1.2.10 ON/OFF Controller

Chroma 6013 ON/OFF Controller is able to control AC and DC input at the same time. Besides, it can control the AC power on/off angle and measure the UUT's import inrush current.

For detail specifications and operation of Chroma 6013 ON/OFF Controller, please refer to its user's manual.

1.2.11 Extended Module

In order to meet the test functions, this SMPS ATS has to connect the above hardware devices with the following extended modules:

1. GPIB card for system controller: The interface device that provides communication signals among various instruments.
2. DIO card for system controller: The interface device that provides Auto Run.
3. External control template: The DIO card connects to system controller. It has 16 input signal sets and 16 output Open Collector sets, and is the control device for signal input and external circuit control.

ⓘ Note
The instruments described above are standard equipment. The instruments shipped should follow the actual delivery of shipment.

1.3 SMPS ATS Software Overview

1.3.1 Introduction to SMPS ATS Software

The requirements for new generation automatic test environment can no longer be satisfied with a proprietary test system. Test engineers cannot be fulfilled with the test system that only has simple and limited functions. They need a flexible test environment that can be changed to adopt various hardware requirements and different test processes.

SMPS ATS software is an open automatic test environment that can fulfill various test requirements. Besides using the built-in standard test items in SMPS ATS, test engineers can modify the built-in test items or create new test items for testing needs according to the UUT characteristics.

Different model instrument has different precision requirements. Therefore, test engineers may want to exchange the DSO to other brand with higher precision. In consideration of this requirement, SMPS ATS is highly flexible in instrument exchange.

SMPS ATS software system uses modular and embedded design that has the following features:

1. Structured under Windows environment and used standardized graphics users interface that make it very friendly and easy to use.
2. Flexible programming interface that can modify the designed steps or create new test items easily.
3. Using the implicit compiled function to enhance the test program execution speed.
4. Able to execute the test items directly and verify the test results immediately.
5. Able to edit the report print format and support multilingual.
6. Able to print the data of failed tests for maintenance.
7. Able to support graphic report functions and can be processed by Microsoft Word.
8. Able to save the test results for production management analysis.
9. On-line operation that gives R&D engineers the ability to integrate system devices for manual test simulation.
10. Instrument driver, which uses Dynamic Link Library (DLL) to make instruments easy to replace or add.

1.3.2 System Module

SMPS ATS software has the following module functions

1. User management:
   Define different user levels, for example, operators can only execute test programs while engineers can access all functions.
2. Hardware device configuration setting:
   Set the interface (GPIB and RS-232C) address configuration and define related module/channel for instrument devices.
3. Test item editing:
   You can write the test process following the test requirements and save the test process to database. The test item can be included to the test program using the test program editor. You can also execute the test items after editing the test process.
4. Compiling:
   This function is hidden in the internal of test item edit function. When you finished editing a test item, it will compile the test item automatically before saving.
5. Test program editing:
   You can write the test program using the test items built in the system or customized by the test engineers. You can also set parameters or test specifications for the test items. The filename extension for test program is .prg, and it is an executable file.
6. Report format editing:
   You can edit the report format for the test items you need. The filename extension for report format is .rpf.
7. Test program execution control:
   The test program after compiled uses this function to run tests. It follows the sequence you edited to call the related test items for test; and log the test results, generate and print the reports, also to decide the outcome of various test items and readings.
8. Report printing:
   Report printing can be done off-line. SMPS ATS software will save the test results that needed by test. This function can be used to print a certain test result of a certain date.
9. Statistics process control:
   Through this function you can use the test results in the database to perform statistics process analysis.

1.4 Software System Requirements

Following software and hardware requirements for personal computer is recommended to use in Chroma 8000 SMPS ATS software.

- Intel CPU 500MHz or above
- Microsoft Windows 98 (second edition), Windows 2000, Window XP or NT (SP5 or above)
- Suggested 400 MB hard disk drive or above
- Minimum 512 MB memory
- VGA or SVGA color display
- PS2 mouse

2. System Installation

This chapter describes how to install Chroma 8000 SMPS ATS hardware and software, also reminds you of the things to notice to avoid any operation errors.

2.1 Installing Chroma 8000 System Hardware

All Chroma 8000 SMPS ATS hardware devices are installed in a 41" height and 19" width standard chassis. Please see the following installation procedures to install the instruments in the chassis from top to bottom. (As the system is in open architecture, the installation sequence described here is for reference only. You can rearrange it as you like.) Below is the standard installation procedure for Chroma 8000 ATS instrument devices.

Installation Procedure

1. Lay down the empty system rack on the ground with face up. Padding the bottom with cushion plate to avoid damaging the chassis and switch.
2. Put the instruments from top to bottom in sequence, such as Digital Storage Oscilloscope, Digital Multi-Meter, Programmable DC Source, DC Electronic Load, Input/Output Terminal, Industrial PC, 6011 Timing/Noise Analyzer, 6012 OVP/Short Circuit Tester, 6013 Power ON/OFF Controller, Power Analyzer and Programmable AC Source. When putting in an instrument, you need to adjust the alumni bracket to the appropriate position and secure it with screws.
3. Lift up the system from the ground and connect each instrument following the connector instruction and the pin assignments list below.

Cable Connections

To explain the connection between the system and the UUT, following example shows the ATX Power Supply with 6 outputs. Figure 2-1 and Figure 2-2 show the connections of the system and the HYPERTRONICS connector, HYPERTRONICS connector and Chroma A600011 Test Fixture. As to other test applications for UUT, please connect them as need.
Note: The portion within dotted lines in Figure 2-1 is applicable to the test applications for D/D Converter UUT only.

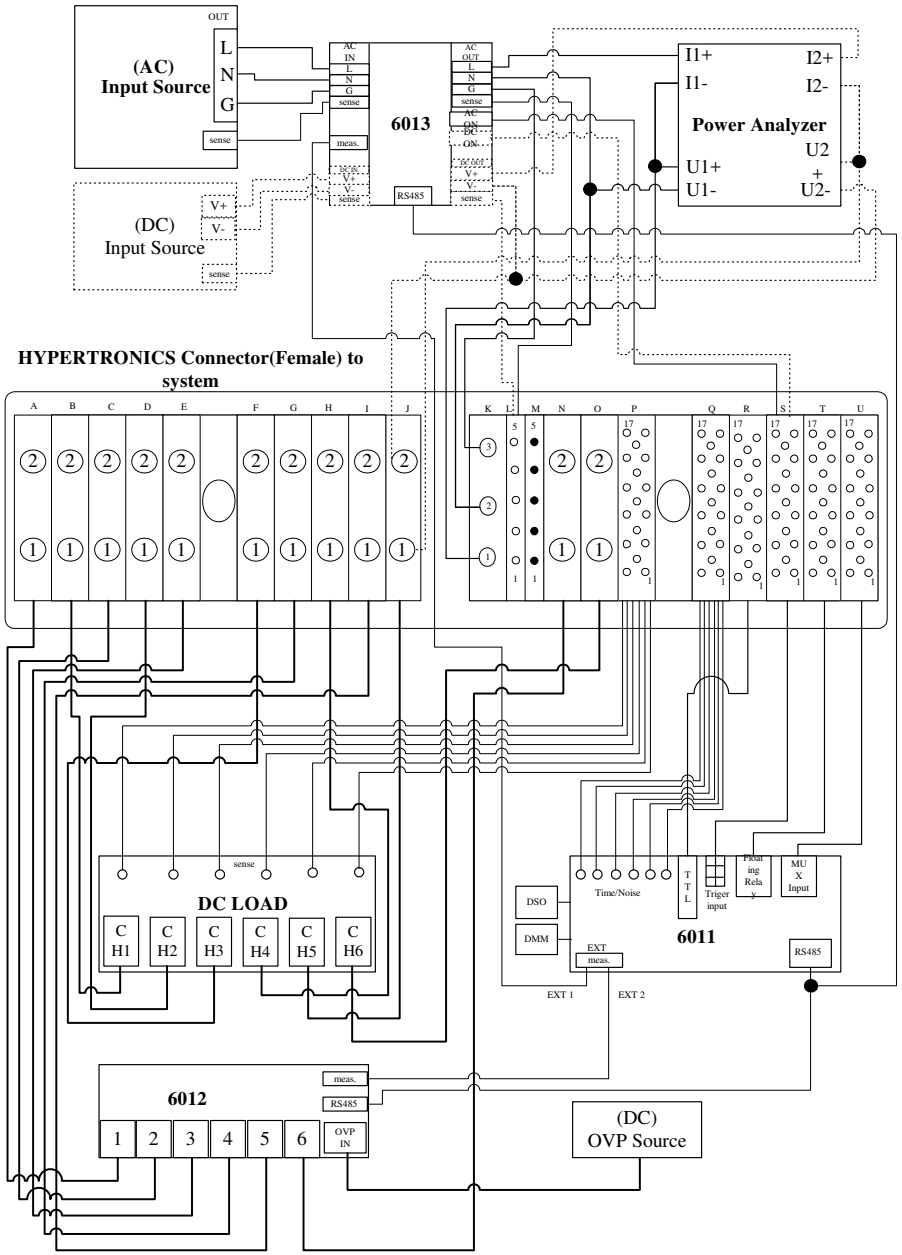


Figure 2-1 Connection between HYPERTRONICS Female Connector to System

HYPERTRONICS Connector(Male) to UUT

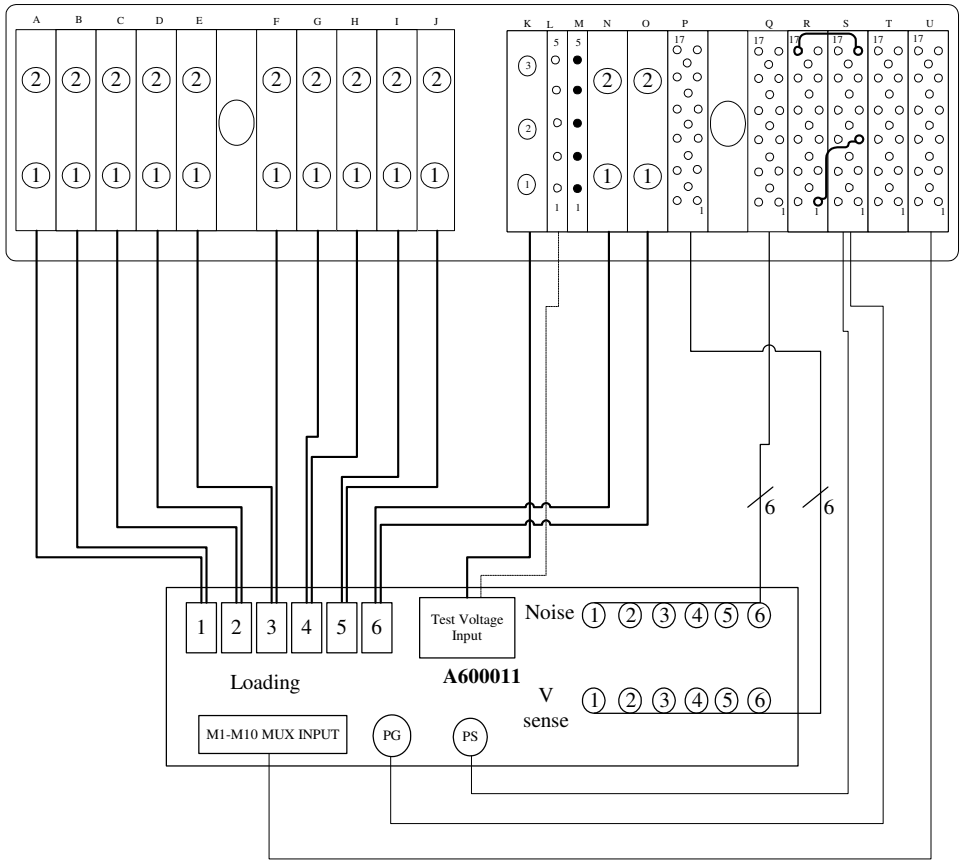


Figure 2-2 Connection between HYPERTRONICS Male Connector to A600011 Fixture

Note: There are two short lines put on CN-R and CN-S (CN=connector), it is for controlling the third signal of 6011 trigger input (i.e. PS signal) by the 1st TTL output of 6011.

HYPERTRONICS Connector Pin Assignment

■ B, D modular:

Part No.	W39 000294	W39 000299
Item	LMFST-2P-4C-R3.5-5*4-150CM	LMMST-2P-4C-R5.5-5*2-150CM
Pin No.	Female to system	Male to A600011
1	DC load modular input (+)	DC load modular input (+)
2	DC load modular input (-)	DC load modular input (-)

■ A, C modular:

Part No.	W39 000293	W39 000299
Item	LMFST-2P-4C-R3.5-5*2-150CM	LMMST-2P-4C-R5.5-5*2-150CM
Pin No.	Female to 6012	Male to A600011
1	6012 (1-6) Short/OVP channel input (+)	DC load modular input (+)
2	6012 (1-6) Short/OVP channel input (-)	DC load modular input (-)

■ E, G, I, N modular:

Part No.	W39 000295	W39 000297
Item	LMFST-2P-2C-R3.5-5*2-150CM	LMMST-2P-2C-R5.5*2-150CM
Pin No.	Female to 6012	Male to A600011
1	6012 (1-6) Short/OVP channel input (+)	DC load modular input (+)
2	6012 (1-6) Short/OVP channel input (-)	DC load modular input (-)

■ F, H, J, O modular:

Part No.	W39 000295	W39 000297
Item	LMFST-2P-2C-R3.5-5*2-150CM	LMMST-2P-2C-R5.5*2-150CM
Pin No.	Female to 6012	Male to A600011
1	6011 (1-6) Short/OVP channel input (+)	DC load modular input (+)
2	6011 (1-6) Short/OVP channel input (-)	DC load modular input (-)

■ K modular: (When the system is define to DC output)

Part No.	W39 000279	W39 000299
Item	LMFST-2P-BANANA*4+R3.5-5*2-150CM	LMMST-2P-4C-R5.5-5*2-150CM
Pin No.	Female to system	Male to A600011
1	PA voltage output (+) (DC)	(DC)Test voltage input (+)
2	PA voltage output (-) (DC)	(DC)Test voltage input (-)

■ K modular:

Part No.	W39 000310	W13 030000
Item	LBFST-3P-BANANA*4+R3.5-5*2-150CM	LBMST-3P-ACEP-150CM
Pin No.	Female to system	Male to A600011
1	PA test voltage output AC line	Test voltage input AC line
2	PA_6013 test voltage output AC neutral	Test voltage input AC neutral
3	PA_6013 test voltage output AC ground	Test voltage input AC ground

■ L modular:

Part No.	W39 000298	W39 000307
Item	LAFST 5P-Y1.25-3*4PCS-150CM	LAMST 5P-R3.5-5*4-150CM
Pin No.	Female to system	Male to A600011 or user‘s application
1	6013 AC line output sense	To UUT AC line input sense
2	6013 AC neutral output sense	To UUT AC neutral input sense
3	Reserved	Reserved
4	6013 DC output sense (+)	To UUT DC input sense (+)
5	6013 DC output sense (-)	To UUT DC input sense (-)

■ M modular:

Part No.	N29 410200	N29 410200
Item	LAHT (for empty modular (A)? HYPERTRONICS CONNECTOR	LAHT (for empty modular (A)? HYPERTRONICS CONNECTOR
Pin No.	Female	Male
1	Reserved	Reserved
2	Reserved	Reserved
3	Reserved	Reserved
4	Reserved	Reserved
5	Reserved	Reserved

■ P modular:

Part No.	W39 000308	W39 000284
Item	LDFST-17P-BANANA*6*2-150CM	LDMST-17P-PRC-2P*6-150CM
Pin No.	Female to system	Male to A600011
1	DC Load Vsense channel 1 (+)	V1 pin A
2	DC Load Vsense channel 1 (-)	V1 pin B
3	DC Load Vsense channel 2 (+)	V2 pin A
4	DC Load Vsense channel 2 (-)	V2 pin B
5	DC Load Vsense channel 3 (+)	V3 pin A
6	DC Load Vsense channel 3 (-)	V3 pin B

7	DC Load Vsense channel 4 (+)	V4 pin A
8	DC Load Vsense channel 4 (-)	V4 pin B
9	DC Load Vsense channel 5 (+)	V5 pin A
10	DC Load Vsense channel 5 (-)	V5 pin B
11	Reserved	Reserved
12	DC Load Vsense channel 6 (+)	V6 pin A
13	DC Load Vsense channel 6 (-)	V6 pin B
14	DC Load Vsense channel 7 (+)	Reserved
15	DC Load Vsense channel 7 (-)	Reserved
16	DC Load Vsense channel 8 (+)	Reserved
17	DC Load Vsense channel 8 (-)	Reserved

■ Q modular:

Part No.	W39 000288	W39 000284
Item	LDFST-17P-PRC-2P*6-150CM	LDMST-17P-PRC-2P*6-150CM
Pin No.	Female to system	Male to A600011
1	6011 noise measure channel 1 pin A	N1 pin A
2	6011 noise measure channel 1 pin B	N1 pin B
3	6011 noise measure channel 2 pin A	N2 pin A
4	6011 noise measure channel 2 pin B	N2 pin B
5	6011 noise measure channel 3 pin A	N3 pin A
6	6011 noise measure channel 3 pin B	N3 pin B
7	6011 noise measure channel 4 pin A	N4 pin A
8	6011 noise measure channel 4 pin B	N4 pin B
9	6011 noise measure channel 5 pin A	N5 pin A
10	6011 noise measure channel 5 pin B	N5 pin B
11	Reserved	Reserved
12	6011 noise measure channel 6 pin A	N6 pin A
13	6011 noise measure channel 6 pin B	N6 pin B
14	6011 noise measure channel 7 pin A	Reserved
15	6011 noise measure channel 7 pin B	Reserved
16	6011 noise measure channel 8 pin A	Reserved
17	6011 noise measure channel 8 pin B	Reserved

■ R modular:

Part No.	W39 000290	N29 430030
Item	LDFST-17P-DB25M-150CM	LDMST 17PIN MALE 8A HYPERTRONICS CONNECTOR
Pin No.	Female to system	Male
1	6011 TTL output 1st pin	User define
2	6011 TTL output 2nd pin	User define
3	6011 TTL output 3rd pin	To 6011 Trigger input 3 (PS ON signal) or user define
4	6011 TTL output 4th pin	User define
5	6011 TTL output 5th pin	User define
6	6011 TTL output 6th pin	User define
7	6011 TTL output 7th pin	User define
8	6011 TTL output 8th pin	User define
9	6011 TTL output 9th pin	User define
10	6011 TTL output 10th pin	User define
11	6011 TTL output 11th pin	User define
12	6011 TTL output 12th pin	User define
13	6011 TTL output 13th pin	User define
14	6011 TTL output 14th pin	User define
15	6011 TTL output 15th pin	User define
16	6011 TTL output 16th pin	User define
17	6011 TTL output ground (17-25 pin)	6011 Trigger input 6 pin (ground) or user define

■ S modular:

Part No.	W39 000285	W39 000302
Item	LDFST-17P-5557-6F+2F -150CM	LDMST-17PIN-DB9 (M)+BNC (M) -150CM
Pin No.	Female to system	Male to fixture A600011
1	6011 trigger input 1 contact to 6013 AC ON signal (+) (AC ON signal)	(AC ON signal)
2	6011 trigger input 2 (PG signal)	To A600011 PG output
3	6011 trigger input 3 (PS signal)	To A600011 PS input (Ext A.B), TTL output pin1
4	6011 trigger input 4 (User define)	Reserved
5	6011 trigger ground	To A600011 ground
6	6011 trigger ground and contact to 6013 AC ON signal (-)	To A600011 ground
7	6013 AC ON signal (+)	To 6011 trigger input 1 or (by user's define)
8	6013 AC ON signal (-)	To 6011 trigger input 5 or 6 pin

9	Reserved	Reserved
10	6013 DC ON signal (+)	To 6011 trigger input 1 or (by user's define)
11	6013 DC ON signal (-)	To 6011 trigger input 5 or 6 pin
12	Reserved	Reserved
13	Reserved	Reserved
14	Reserved	Reserved
15	Reserved	Reserved
16	Reserved	Reserved
17	Reserved	Reserved

■ T modular:

Part No.	W39 000286	N29 430030
Item	LDFST-17P-5557-12P-150CM	LDMST 17PIN MALE 8A HYPERTRONICS CONNECTOR
Pin No.	Female to system	Male for user's application
1	6011 floating relay 1 group (+)	User define
2	6011 floating relay 2 group (+)	User define
3	6011 floating relay 3 group (+)	User define
4	6011 floating relay 4 group (+)	User define
5	6011 floating relay 5 group (+)	User define
6	6011 floating relay 6 group (+)	User define
7	6011 floating relay 1 group (-)	User define
8	6011 floating relay 2 group (-)	User define
9	6011 floating relay 3 group (-)	User define
10	6011 floating relay 4 group (-)	User define
11	6011 floating relay 5 group (-)	User define
12	6011 floating relay 6 group (-)	User define
13	Reserved	Reserved
14	Reserved	Reserved
15	Reserved	Reserved
16	Reserved	Reserved

- U modular:

Part No.	W39 000287	W39 000309
Item	LDFST-17P-5557-20P-150CM	LDMST-17P-CONN-20(M)-150CM
Pin No.	Female to system	Male for user‘s application
1	6011 MUX input 1 group (+)	User define
2	6011 MUX input 1 group (-)	User define
3	6011 MUX input 2 group (+)	User define
4	6011 MUX input 2 group (-)	User define
5	6011 MUX input 3 group (+)	User define
6	6011 MUX input 3 group (-)	User define
7	6011 MUX input 4 group (+)	User define
8	6011 MUX input 4 group (-)	User define
9	6011 MUX input 5 group (+)	User define
10	6011 MUX input 5 group (-)	User define
11	Reserved	Reserved
12	6011 MUX input 6 group (+)	User define
13	6011 MUX input 6 group (-)	User define
14	6011 MUX input 7 group (+)	User define
15	6011 MUX input 7 group (-)	User define
16	6011 MUX input 8 group (+)	User define
17	6011 MUX input 8 group (-)	User define

2.2 Input Power Supply Requirements and Cautions

The table below shows the input voltage and power requirements for the instruments in Chroma 8000 SMPS ATS.

Instruments	Input Voltage	Frequency	Power	Mode No.
Programmable AC Source	115 / 250 V	47-63HZ	5000W	Chroma 6530
Programmable DC Electronic Load	115 / 230 V	47-63HZ	180VA max.	Chroma 6310 632802
Digital Storage Oscilloscope	115 / 230 V	47-63 HZ	130VA max.	Tektronix 3012
Digital Multi-Meter	115 / 230 V	50-60 HZ	115W	HP 34401
Timing/Noise Analyzer	115 / 230 V	50-60 HZ	173W	Chroma 6011
OVP/Short circuit Tester	115 /230 V	50-60 HZ	115W	Chroma 6012
Power ON/OFF Controller	115 /230 V	50-60 HZ	115W	Chroma 6013
Power Analyzer	130 /240 V	50-60HZ	45W	Chroma 6532

Table 2-1 Input Voltage and Power Requirements for Various Instruments

This system is equipped with 230VAC input instruments. The power is inputted from the power inlet at the bottom of the rear plate. Two AC 230V power inlets are extended for other instrument use. Be sure to check if the power inlets are enough. If the instrument to be added is not using 230VAC input power, you need to connect it separately. For normal operation and prolonging the tenure of use, please make sure that proper input power with stable voltage and frequency is supplied.

Caution
To avoid power overload, which could damage the equipment, do not use the instrument that is not for 8000 SMPS ATS.

2.3 Installing/Uninstalling SMPS ATS Software

Before using Chroma 8000 system, you need to install the SMPS ATS software to your computer hard disk. Following section describes how to install SMPS ATS software on your Windows environment step by step.

2.3.1 Installing GPIB Interface Driver

- Please follow the steps described in the GPIB Interface Installation Manual for installation.
- To ensure the parameters in SMPS ATS software will take effect in the Windows system, please reboot your computer after completing the above installation procedures. Before starting SMPS ATS software, please insert the SMPS ATS software protection key to the LPT1 printer port on your PC. To avoid system down be sure to remove the protection key when the PC is powered off.

2.3.2 Installing SMPS ATS Software on Windows

- Your computer should have at least 40 MB space available before installation.
- Connect the Software Protection Key to LPT1 or USB port.
- Place the SMPS ATS software CD to CD drive.
- If you are installing it from CD and your operating system supports Auto Run function, the installation program will execute automatically. Or, you can choose one of the following methods to run the SETUP.EXE installation program.

1. Use 'Run (R)…' to install

   a. Click 'Start' button at the lower-left corner on your Windows desktop, and select 'Run(R)…' command to execute.

   b. Then click **Browse(B)...** to select CD drive (D:) for running SETUP.EXE. Generally this file is located in the root directory or under Disk1 directory in the installation program.

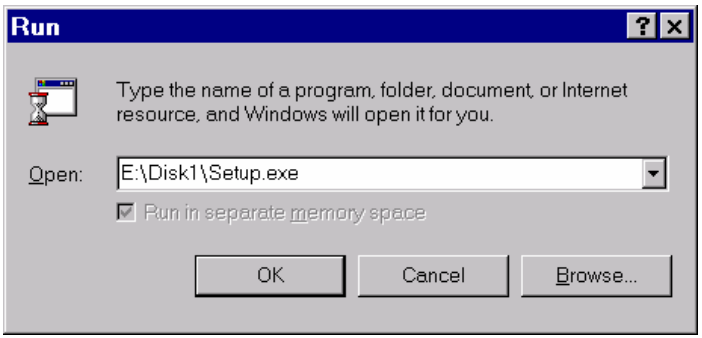


Figure 2-3 Run Window

c. Click **OK** to start installation.

2. Use 'Windows File Manager' to install

   a. Click 'Start' button at the lower-left corner on your Windows desktop, and click 'Program', then select 'Windows File Manager'.

   b. Select the disk drive (A: or B:) or CD drive (D: or others) where the installation program is in, and double-click SETUP.EXE to start the installation process.

   c. When installing the screen will appear as Figure 2-4, you can decide if you need to install the NI VISA or NI IVI Engine software depending on whether they have been installed. It is suggested to install them following the sequence of NI-VISA, and then NI-IVI Engine. Chroma 8000 System Software is to be installed at last.

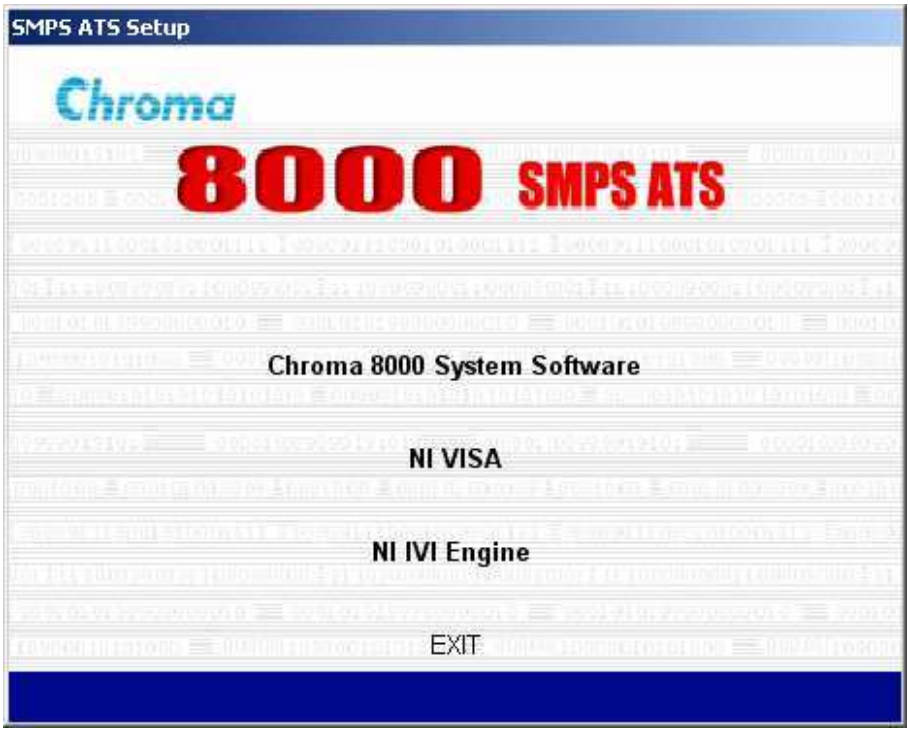


Figure 2-4 Chroma 8000 System Software Installation Main Screen

d. Click **Chroma 8000 System Software** as showed in Figure 2-4 to install Chroma 8000 SMPS ATS software, the screen will appear as Figure 2-5.

Figure 2-5 System Software Version Information Screen

- Please follow the installation program wizard to complete the work.

Figure 2-6 Installation Progress

- You will be requested to enter user name and company name while installing.

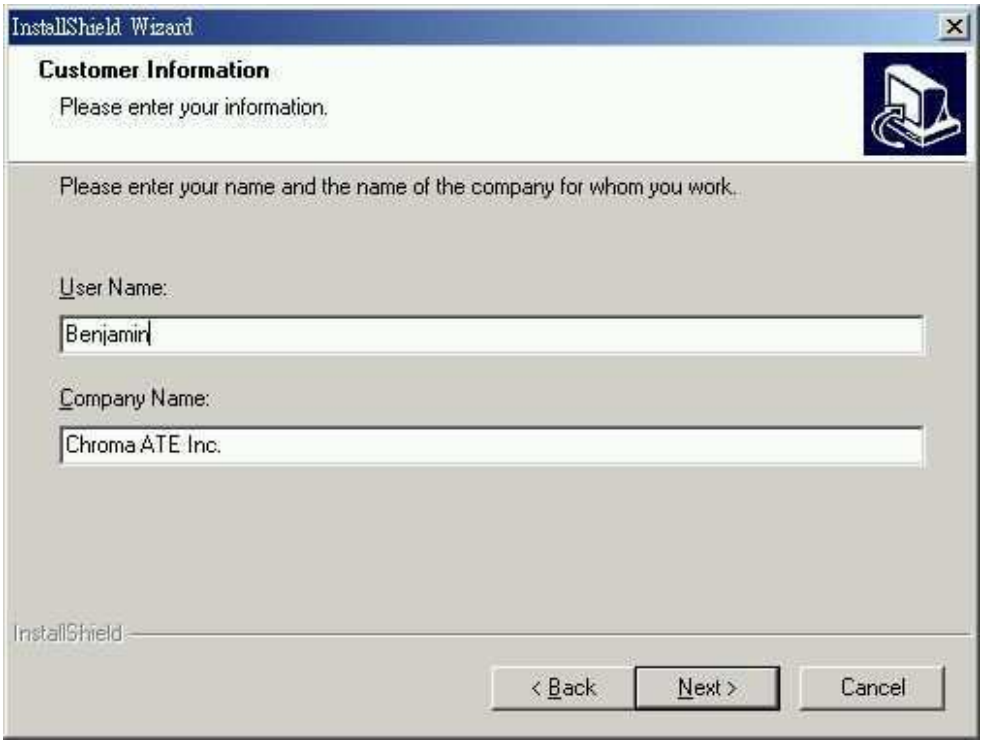


Figure 2-7 Enter User Name and Company Name

- You can select the type of the hardware.

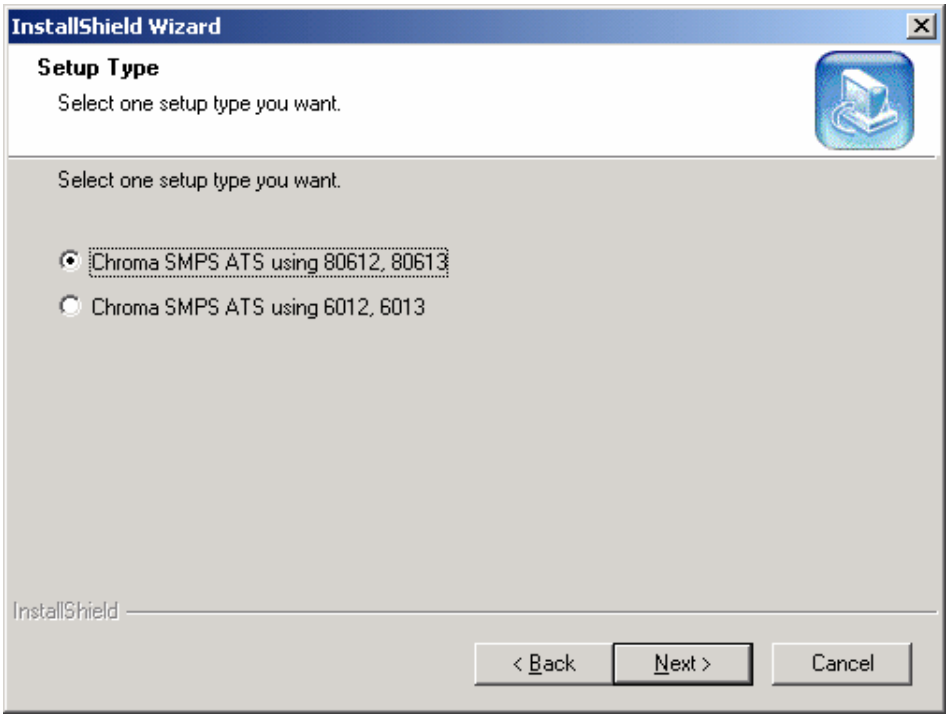


Figure 2-8 Select the type of the hardware

- During installation you can choose the destination location you want. If you have no preference, we suggest you to click **Next >**, then the program will create a default directory `Chroma\SMPS_ATS` under `C:\Program Files` automatically, and install all related programs and files under this directory. Following screen shows you the directory created by the installation program wizard.

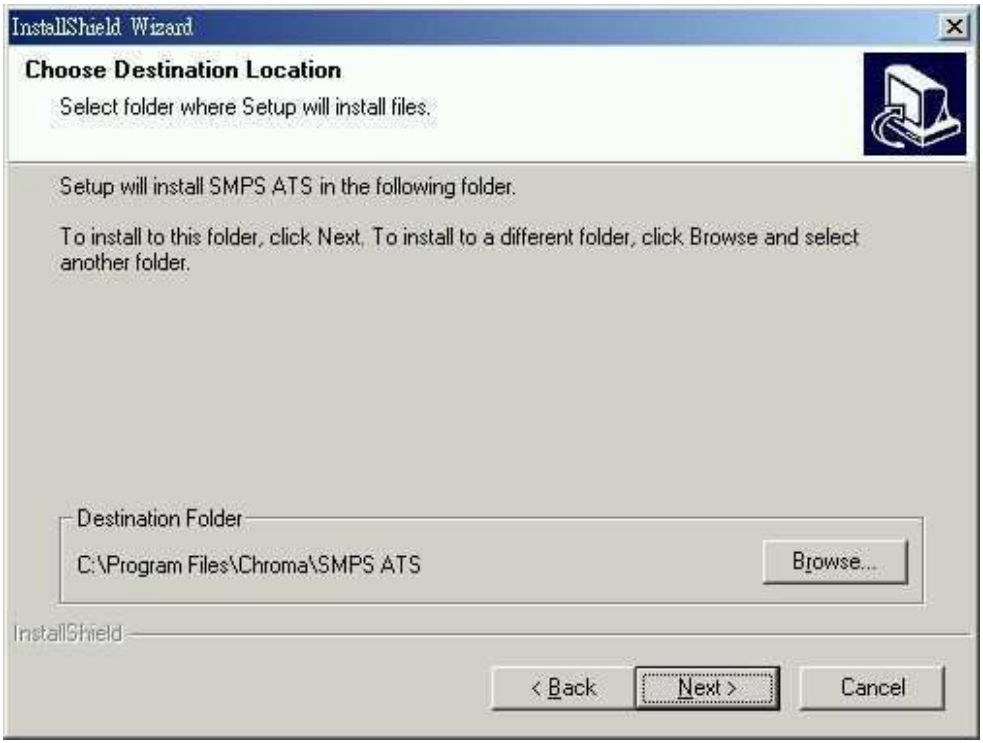


Figure 2-9 Select the Destination Directory

Under `C:\Program Files\Chroma\SMPS_ATS` system software directory, it has the following subdirectories. The content in each subdirectory is described below.

\Bin	SMPS ATS software programs.
\Data\Db	System database.
\Data\OnLineCtrl	The 'On-line Control' program parameter setting files.
\Help	To store the help explanation files of each program module.
\HWCfg	To store the hardware configuration file (.hwc).
\Ini	Test program information files.
\Lib	Instruments driver libraries.
\Log	Empty at installation, to store the test result statistics data logs (use the test program name as subdirectory).
\Program	To store test programs (.prg).
\Report\Format	To store report format files (.rpf).
\Report\Project	To store 'Report Wizard' project files.
\Spc	To store 'Statistics' project files (.spc).

\Visa	VISA installation program.
\UTP\Db	Empty when installed, it stores the Universal Test Program database files (.mdb).
\UTP\Ini	Empty when installed, it stores the Universal Test Program information files.
\UTP\Log	Empty when installed, it stores the test result statistics logs of Universal Test Program.
\UTP\Program	Empty when installed, it stores the Universal Test Program (.prg).

2.3.3 Uninstalling SMPS ATS Software

If you want to remove SMPS ATS software, we suggest you to uninstall it by clicking **'Start'** button, then **'Setting'** → **'Control Panel'** → **'Install/Uninstall Program'**, and select Remove in the InstallShield Wizard to delete the SMPS ATS software related programs. You can also select Repair to reinstall SMPS ATS software or select Modify to change the type of the hardware.

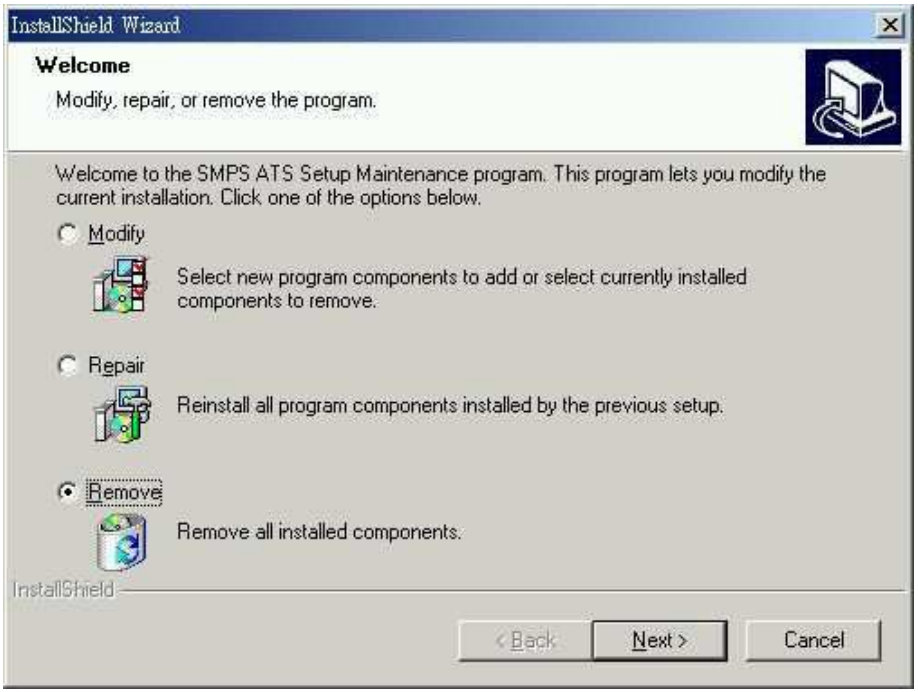


Figure 2-10 Modify/Repair/Remove SMPS ATS Software

In Windows 98 operating system, the system may require a restart to install the Hasp Driver during installation process. Please install the SMPS ATS software again after restarted.

Figure 2-11 Restart the System after Installed the Hasp Driver

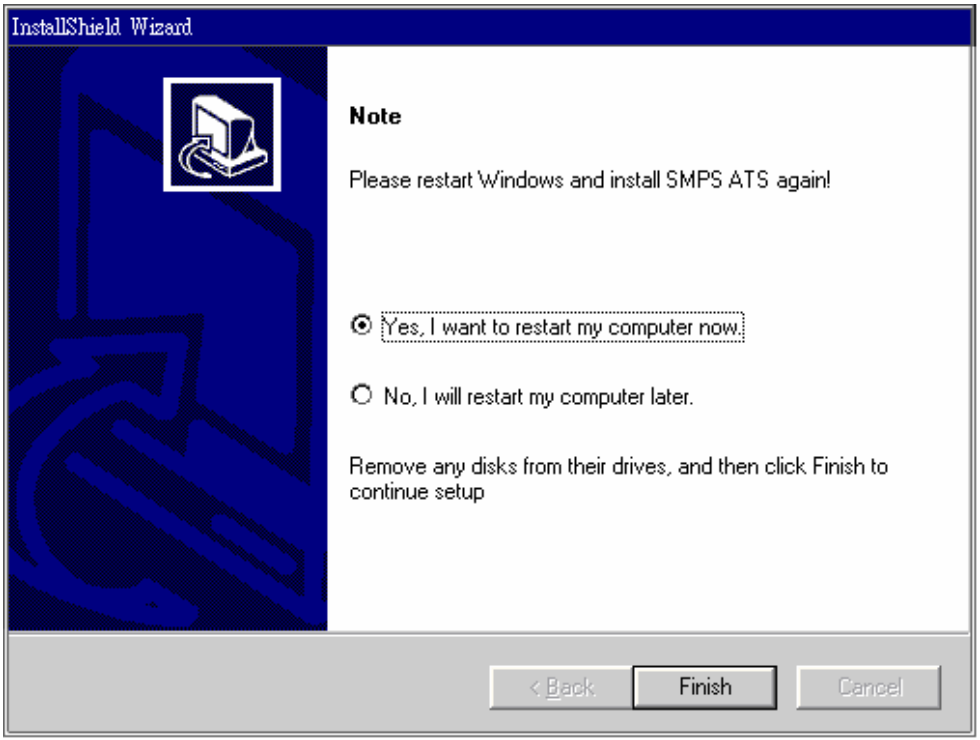


Figure 2-12 Install the SMPS ATS Software Again after Restart

3. Basic Operation

This chapter briefly introduces the basic operation of SMPS ATS software and the concepts of test programs. For detail operation, please see the later chapters.

3.1 Notices Before Power On

You need to ensure that there is enough and stable AC power to supply all devices used in the system before you power on the SMPS ATS for operation. To reduce the inrush current generated at the moment when turning on the machine, and causes impact on the system, we suggest you to turn on the machine following the sequences described here. First turn on the AC or DC Source, then OVP/UVP Power Supply, Electronic Load and other instrument modules, the last are your PC and other peripherals.

3.2 How to Start SMPS ATS Software

If you already followed the instructions described in Chapter 2 to install SMPS ATS software on your hard disk, your computer desktop will appear a shortcut for SMPS ATS software. You can double-click the shortcut to activate SMPS ATS software. You can also click 'Program(P)' to execute SMPS ATS software following the steps listed here, **'Start'→ 'Program(P)' → 'SMPS ATS'**.

Following Login Screen as Figure 3-1 shows up after executing the SMPS ATS software:

Figure 3-1 Login Screen

Please enter correct User ID and Password, then click **Login** to start SMPS ATS software. If you are using the software for the first time, please enter 'root' for User ID and leave blank for Password to login. For safety, please be sure to add password for 'root' after login. You

can also click **Option** to start WebCam. After you login successfully, the screen SMPS ATS software main menu will show as Figure 3-2.

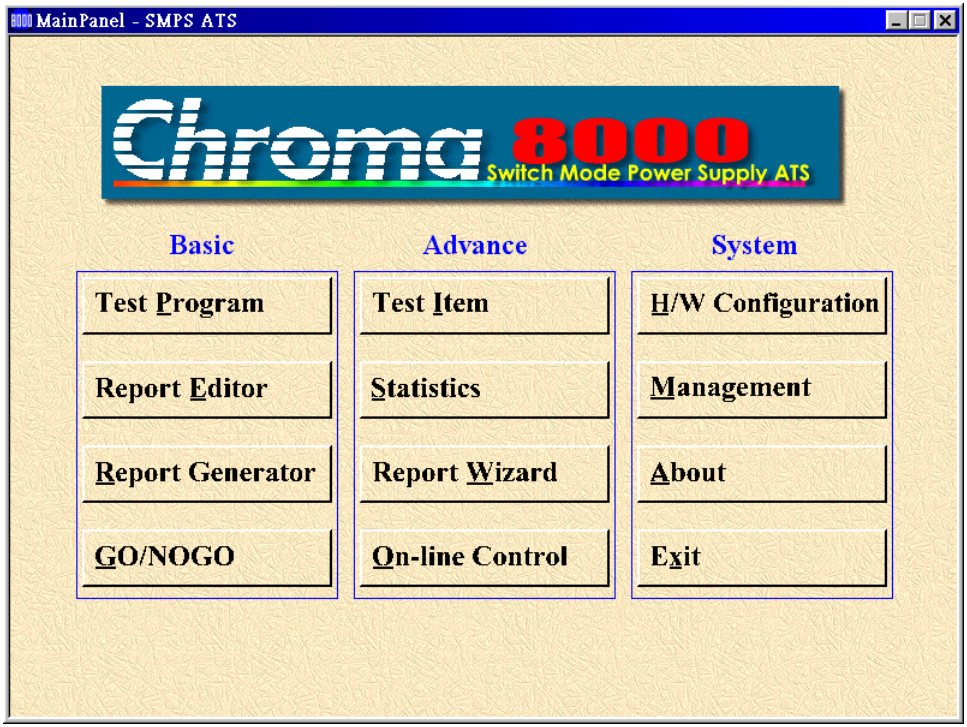


Figure 3-2 SMPS ATS Software Main Menu

SMPS ATS software main menu is composed of three function groups with 12 selection items. The three groups are **Basic**, **Advance** and **System** as explained below.

Basic Function Group

Test Program	To edit test program.
Report Editor	To edit the report output format.
Report Generator	To print the saved test result.
GO/NOGO	For operators to perform tests.

Advance Function Group

Test Item	To add and edit the customized test items.
Statistics	To execute the statistics process analysis.

Report Wizard	To save the test data (graphics or text) and export to Microsoft Word.
On-line Control	For R&D engineer to integrate the system devices for manual test simulation.

System Function Group

H/W Configuration	To set up the hardware configuration for instrument device (ex. GPIB address) and select the needed test devices.
Management	To manage user levels and execution of import and export.
About	The statement of SMPS ATS software.
Exit	To quit the SMPS ATS software.

3.3 SMPS ATS Software Operation Flow

Here is the SMPS ATS software operation flow.

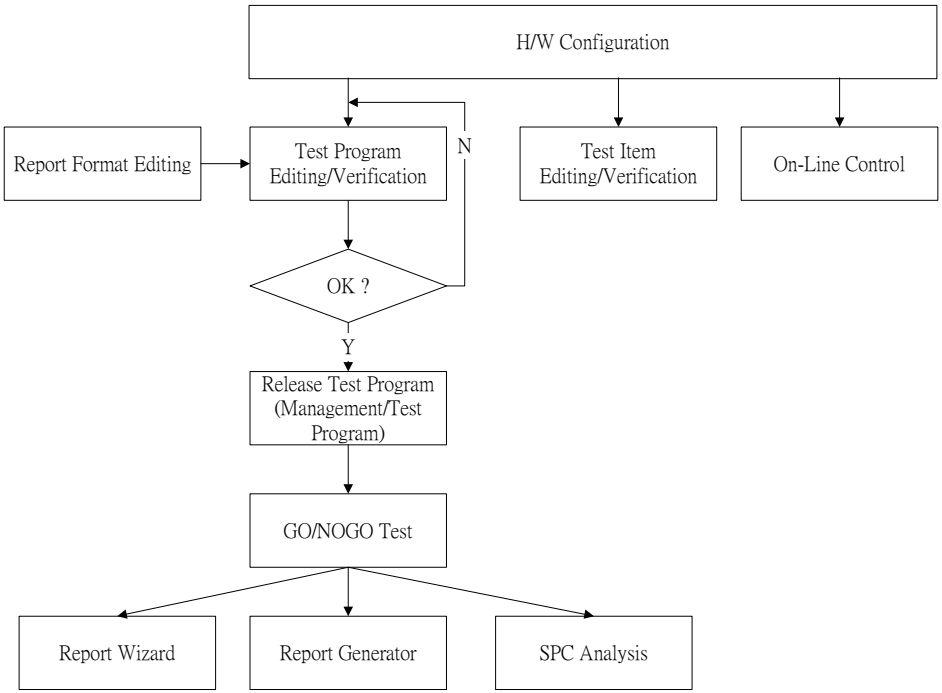


Figure 3-3 SMPS ATS Software Operation Flow

3.4 Setting Instrument Device Configuration

Click **H/W Configuration** in System group from the SMPS ATS software main menu, it will show the instrument configuration window as Figure 3-4. Please follow the configuration to set up parameters, such as GPIB address and RS-232C parameter.

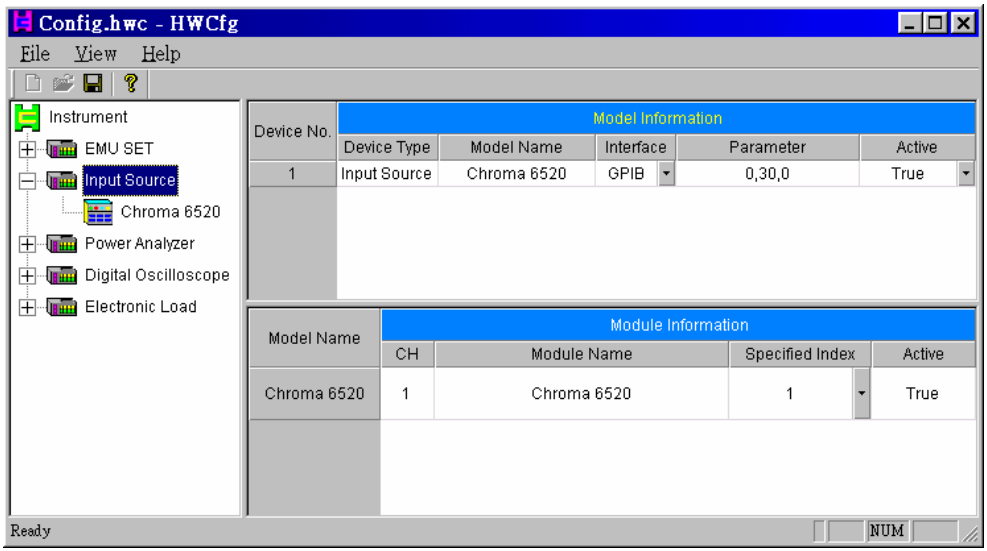


Figure 3-4 Instrument Configuration Window

3.5 Creating New Test Program

A test program is composed of many test items. The system has some built-in test items for use right away. To create a new test program, please select the test item you need first then set the test item parameters, finally set the required report format (.rpf file) for report output reference.

Click **Test Program** in Basic group from the SMPS ATS software main menu, it will show the test program edit window and request for the name of the test program you wish to open. If you select 'Create new TP' and click **OK** a new blank test program will appear as below.

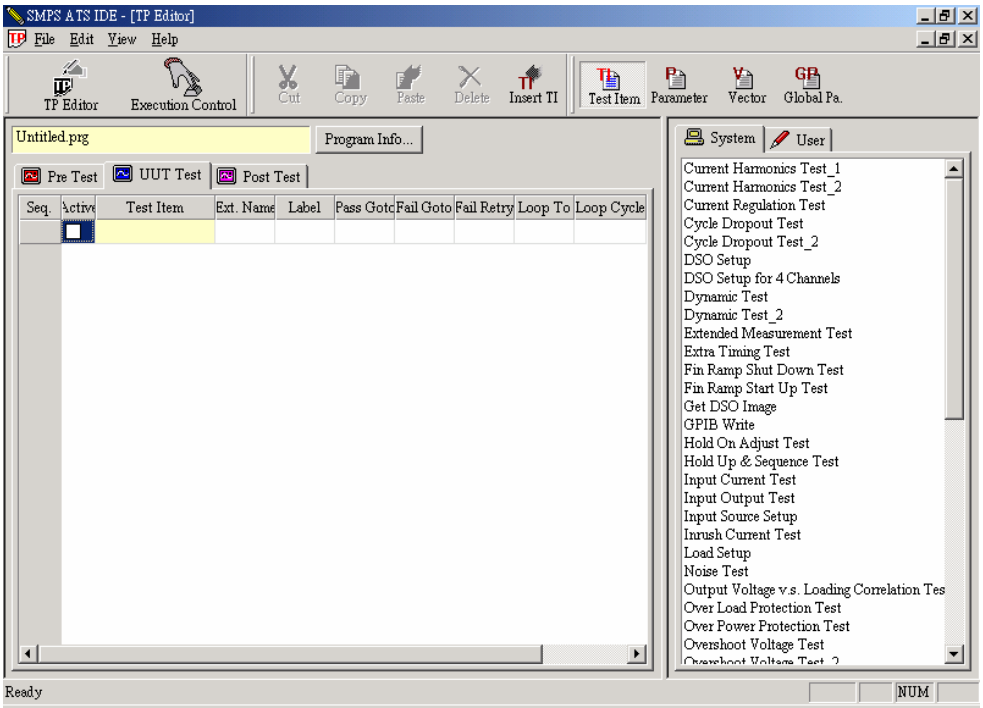


Figure 3-5 Test Program Editor Window

Setting Test Program Info:

Click **Program Info** on the left window, it will display the Test Program Information window.

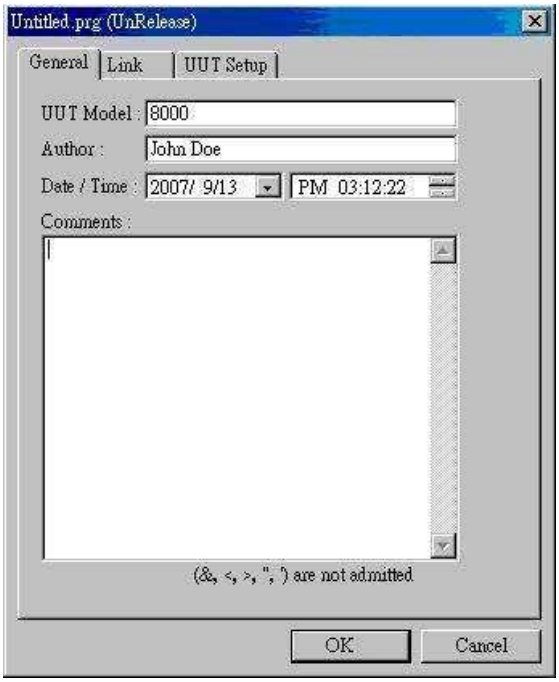


Figure 3-6 Test Program Information Dialog Box

Please enter the parameters as per your need. The Report Format File in Link tab is for test result printout. If you wish to use different filename, please click the button at right to select the file needed.

Adding Test Item to Test Program:

First select the Seq. you want to insert in the test item table on the left window. Assuming it is Seq.3, then double-click the test item you want on the right window. (Or you can select the test item and click **Insert TI** on the toolbar.) Thus the test item will be added to Seq.3, and the original Seq.3 will be pushed to Seq.4, and so forth.

The test item's position and sequence can be anywhere you like; however, we suggest that the first test item in Pre Test group should be System Setup.

Setting Vector:

You can select **[View]→[Vector Editor]** from the main menu or click **Vector** on the toolbar to switch to Vector Editor. As Figure 3-7 shows, the Vector Set Select is on top of the menu and the drop-down selection box enables you to select the Vector type you want to edit. There are 4 default vector settings when the system shipped that are **Line In Vector**, **Load Vector**, **Spec. Vector** and **Ext. Meas. Vector**.

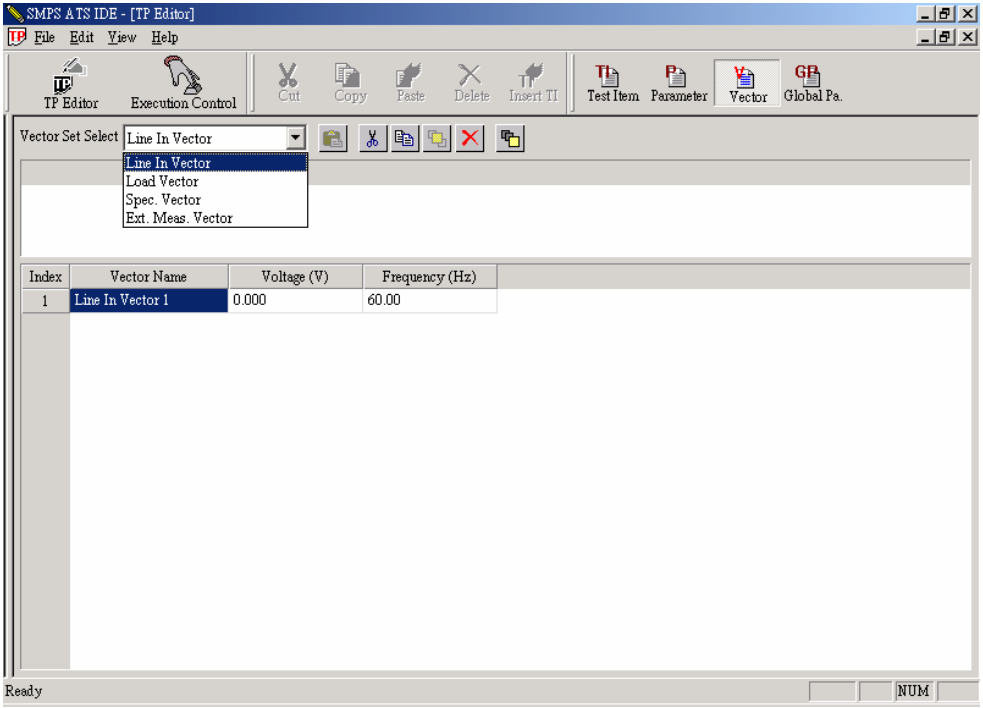


Figure 3-7 Vector Editor Window

Setting Test Item Parameter:

You can click **Parameter** or double-click the Test Item column in the test program item table. The original test item list area will change to test item parameter editor as Figure 3-8 shows.

Click the test item you need in the test program item table. The test item parameter editor will display the selected test item parameter for editing.

After completing the parameter setting, click **Test Item** on the toolbar, the test item parameter editor will return to the test item list area.

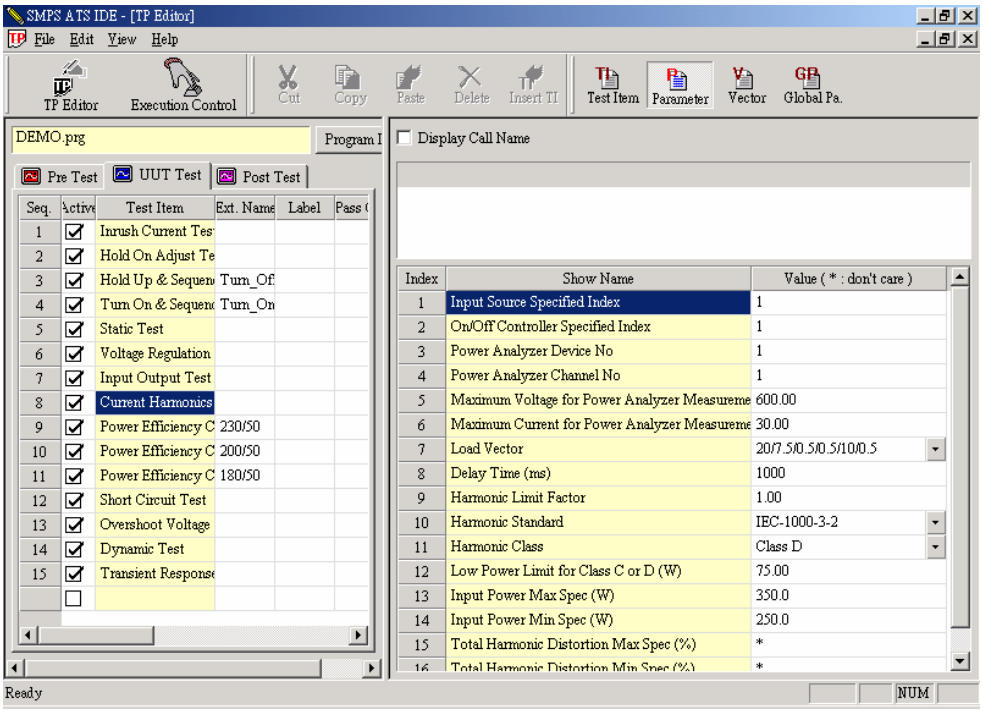


Figure 3-8 Test Item Parameter Editor Window

Saving Test Program:

After the test program is created, please remember to save it to ensure the modified contents will be logged to the storage device.

3.6 Verifying Test Program

After setting the parameters (including Vector and Global Parameter) for every test item, you can click **Execution Control** , then the screen will change to the window as Figure 3-9 shows that indicates the SMPS ATS software is ready to execute the test program edited. You can click **TP Editor** at anytime to return to the test program editor window via test result. A series of retest to verify the parameters you set are ok is required before releasing the test program to production line for execution. Please be sure to run the releasing procedure described in the following section.

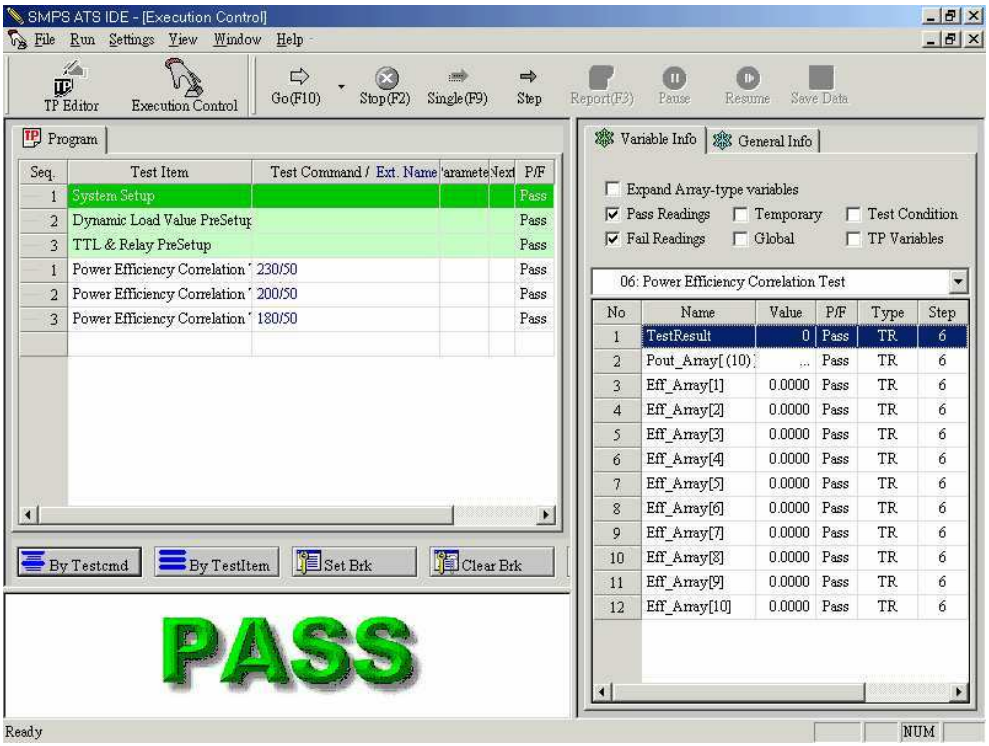


Figure 3-9 Test Program Detail Execution Screen

3.7 Releasing Test Program

Before you execute the test program through GO/NOGO module, please return to the SMPS ATS software main menu, and click **Management** in the System group. The window is shown as Figure 3-10. Switch to Test Program tab and select the test program in the Released check box. Only the released test program can be executed by GO/NOGO program.

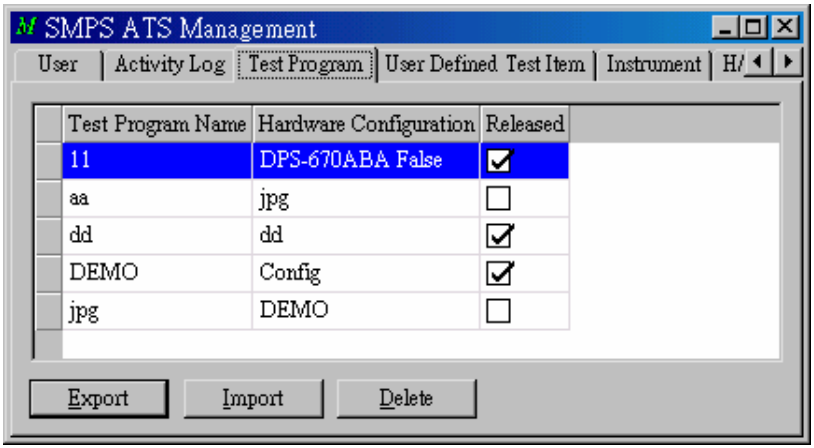


Figure 3-10 Release Test Program

3.8 Executing Test Program

In the SMPS ATS software main menu, click **GO/NOGO** in the Basic group to enter the window as Figure3-11 shows below.

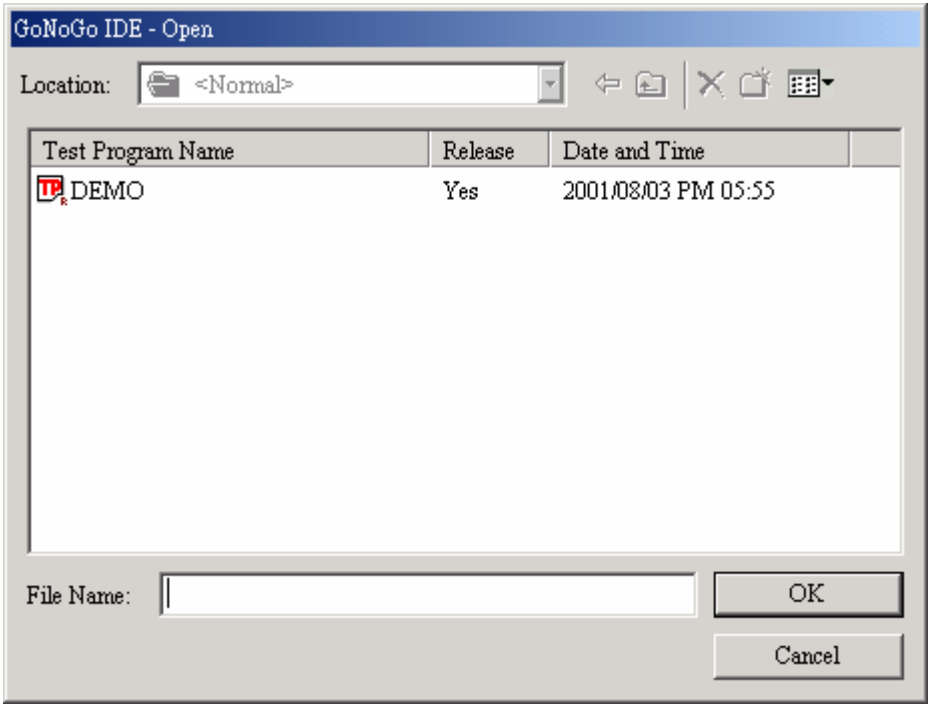


Figure3-11 Test Program Open Window

After you selected the test program name and clicked **OK** , the screen will display the window as below.

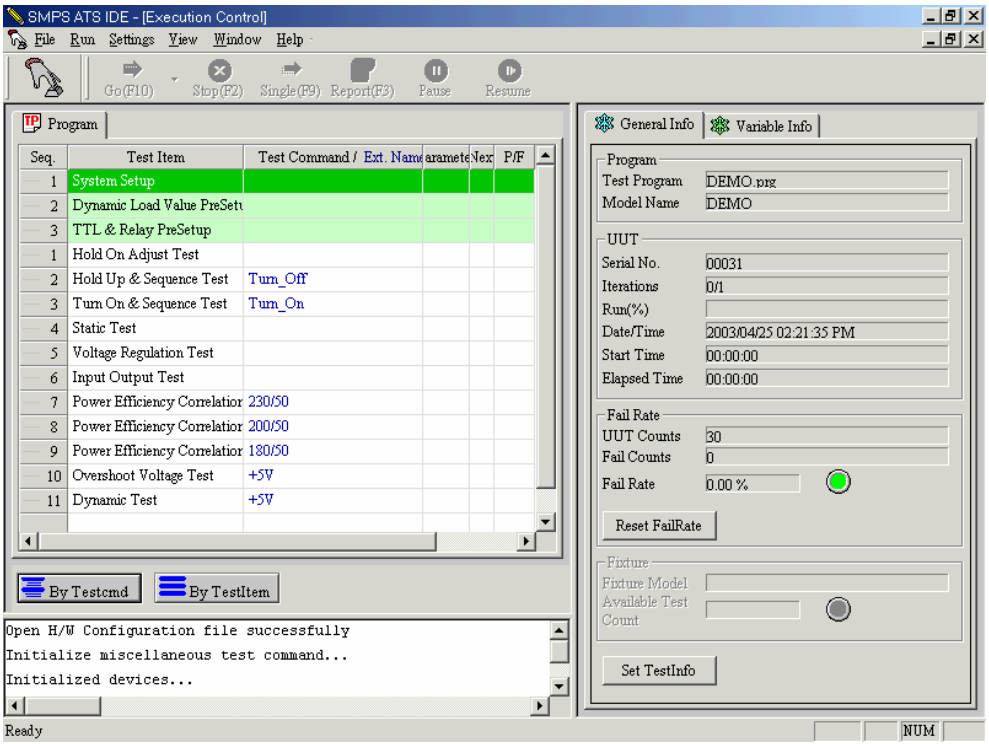


Figure 3-12 GO/NOGO Program Screen

When the lower-left corner window appears the message "Initialize 5 Devices Successfully!", you can click F10 function key on the keyboard or click **Go(F10)** on the toolbar. SMPS ATS software follows the parameters set in the test program for execution.

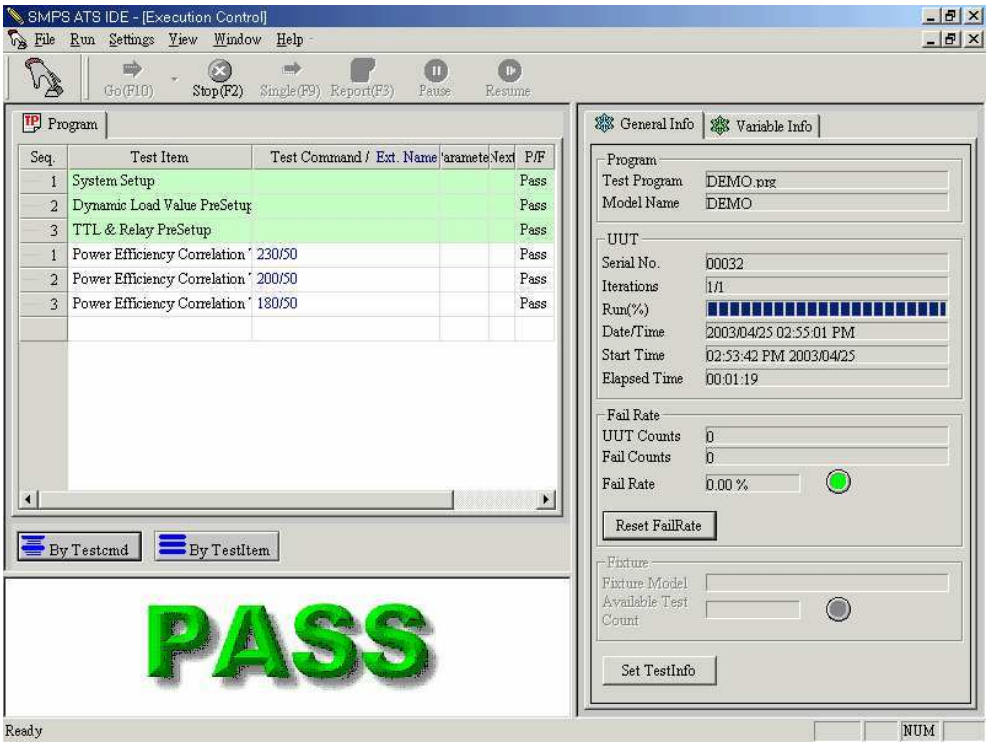


Figure 3-13 GO/NOGO Execution Result Screen

3.9 Printing Test Result Report

There are two ways to run the Report Generator program. One is in Off-line mode to select the **Report Generator** in Basic group from the SMPS ATS software main menu. It will run 'Report Generator' and display 'Select data of tested UUTs from database' window. Another way is to call GO/NOGO program automatically during test in On-line mode and send the test result to this program.

When executing Off-line, it will appear the 'Select data of tested UUTs from database' window to let you select the data you want to use for report generation. You can also use the menu function **[File]→[Open Log Database]** to open this window as Figure 3-14 shows. There are three options in the screen to filter the UUT. 'All' means to find all UUTs, 'Pass UUT Only' means to find the UUTs that passed and 'Fail UUT Only' means to find the UUTs that failed.

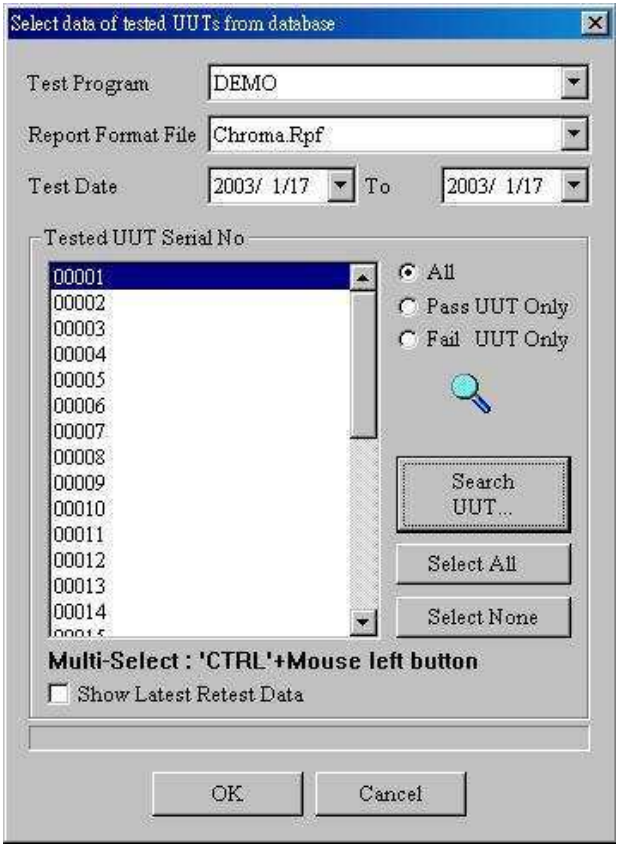


Figure 3-14 'Select data of tested UUTs from database' Window

After completed the setting, click **OK** to let the program help you generate the report shown in Figure 3-15.

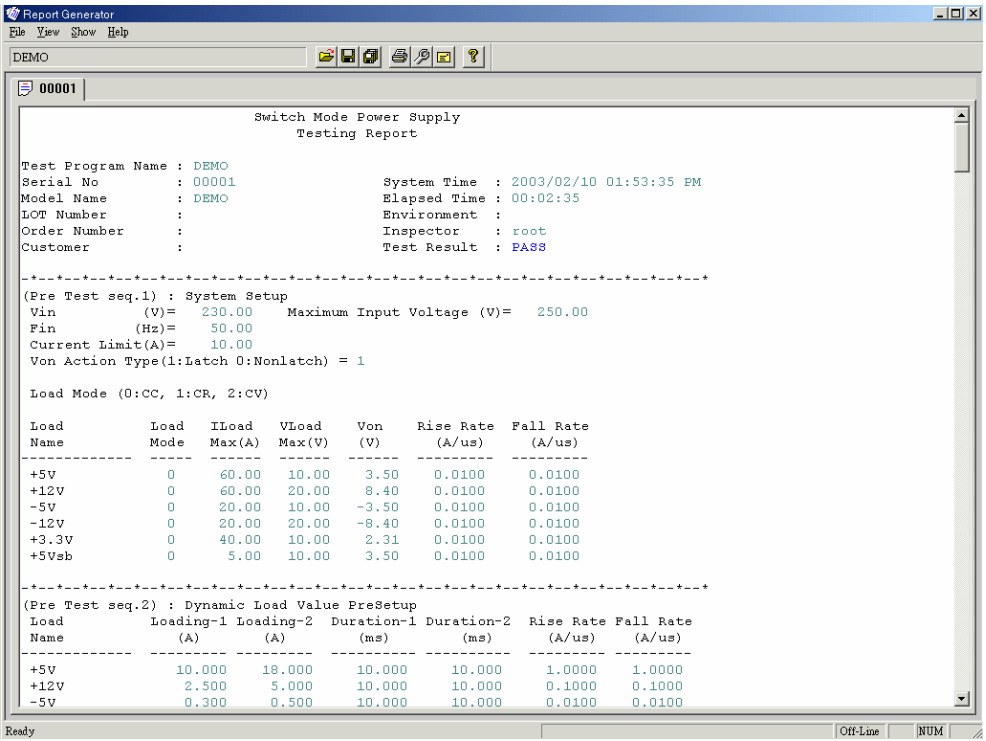


Figure 3-15 Report Contents Display

3.10 Exiting SMPS ATS software

There are three ways to exit SMPS ATS software program from the main menu.

1. In the main menu, point to **Exit** in the System group and click, or
2. In the main menu, point to **x** at the upper-right corner and click, or
3. In the main menu, press **Alt + F4**.

4. Hardware Configuration

4.1 Program Execution

Selecting **H/W Configuration** in the System group from the SMPS ATS software main menu will run 'Hardware Configuration' program and read the default configuration file (*.hwc*) by displaying the hardware configuration window as Figure 4-1 Hardware Configuration Window shows.

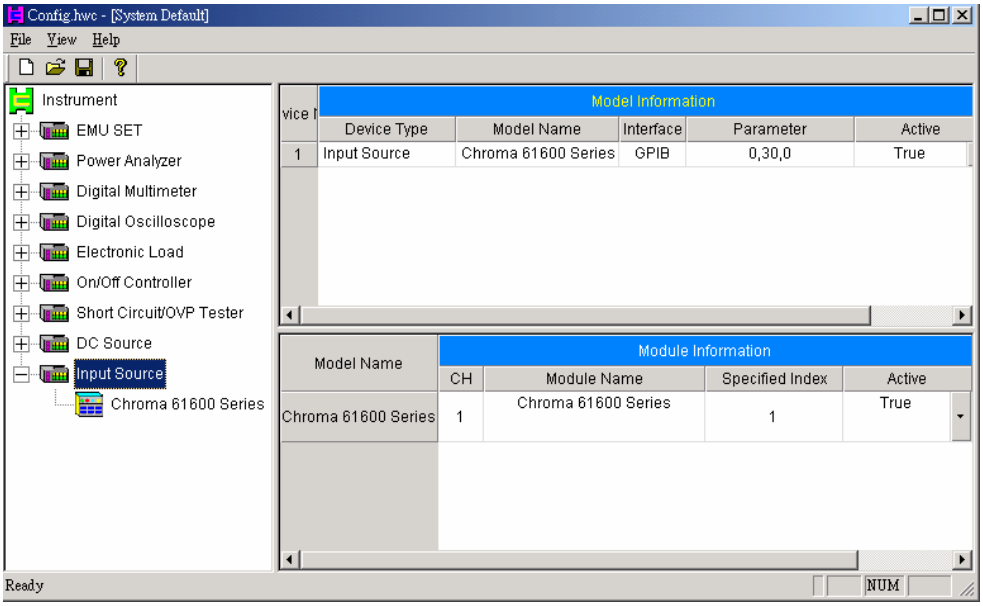
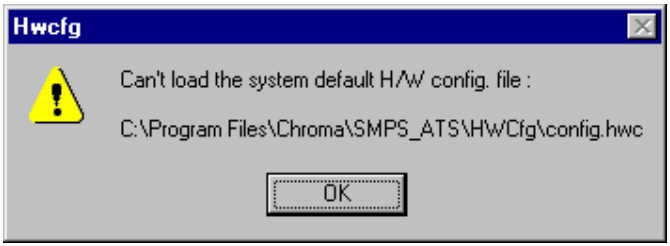


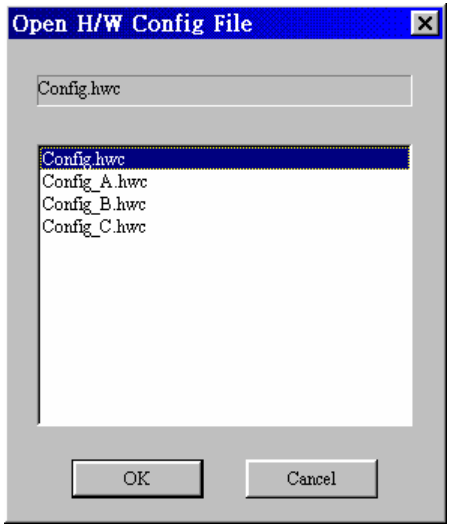
Figure 4-1 Hardware Configuration Window

'Hardware Configuration' program follows the Registry contents to read the default configuration file (*.hwc*) at initial execution phase and display the hardware configuration window according to the configuration file. If the default *.hwc* file does not exist, the program will inform the user. (The default is config.hwc after the system is initially installed.)



You can use the menu function **[File]→[Save]** to save the edited configuration file or use **[File]→[Save As…]** to save it to another file name. In this program you can open different *.hwc* file, but the system can only have one default *.hwc* file. You can use the menu function **[File]→[Set As System Default]** to save the configuration file as default. Once the system default file is defined, it will be executed at initialization.

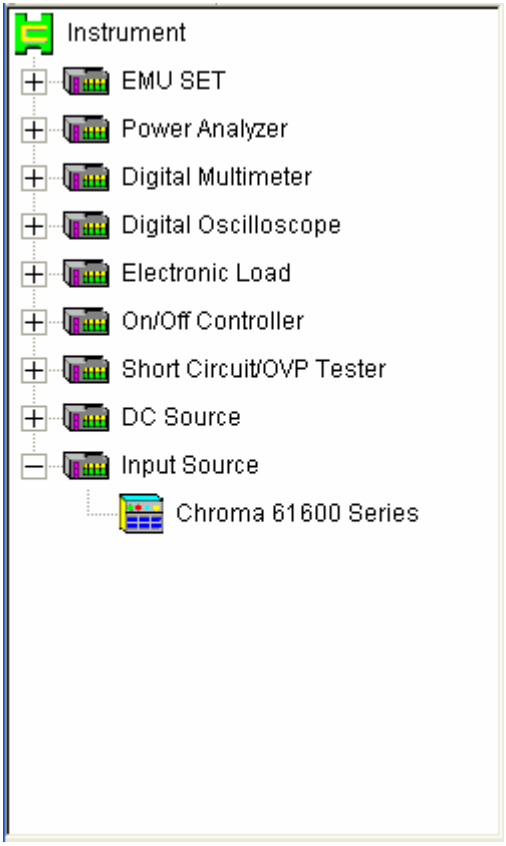
If you wish to redefine the configuration file, you can use the menu function **[File]→[New]** or **[File]→[Open…]** to open the existing configuration file as shown below.



4.2 Hardware Configuration Window Description

The Hardware Configuration Window is divided into three parts - *Instrument Window*, *Model Information Window* and *Module Information Window*. You can adjust the window size according to your needs for display. The window contents are explained below.

4.2.1 Instrument Window

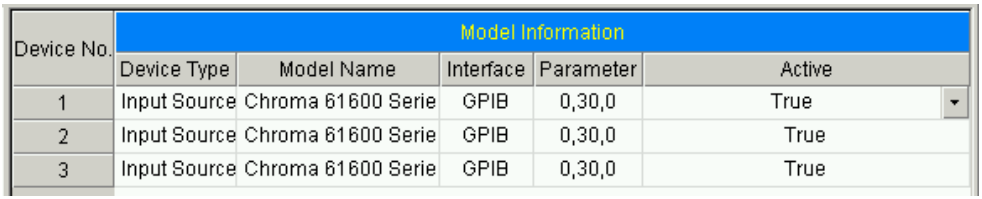


'Instrument Window' is used to add and delete the current hardware configuration, and display the instrument type, model and quantity configured for test in tree structure. There are five levels in the tree structure: the first level is *Instrument*, an overview of instrument category, the second level is *Device Type* for instrument type, the third level is *Model* for instrument model name, the fourth level is *Sub Device Type* for the special instrument type of the third level, and the fifth level is *Sub Model* for the special instrument model of the third level. They are explained in the table below.

When it shows ⊕ in the window means there are other instrument devices in the lower level. You can click ⊕ to expand it. Click the instrument and its related info will appear on the *Model Information Window* and *Module Information Window*.

	Type	Meaning	Example
First level	*Instrument*	An overview of instrument category	
Second level	*Device Type*	Instrument type	*EMU Set*
Third level	*Model*	Instrument model number	*Chroma 6011*
Fourth level	*Sub Device Type*	Special instrument type for some particular instruments	*Short Circuit/OVP Tester*
Fifth level	*Sub Model*	Special instrument model name for some particular instruments	*Chroma 6012*

4.2.2 Model Information Window



It uses *Grid* to display the instrument related information, including *Device Type*, *Model Name*, *Interface* and *Parameter* for communication interface, as well as if it is *Active*. This window will display different contents according to the item you selected in Instrument Window. Select the first level will show all *Model* information, select the second and fourth level will display the current instrument *Model* information that has same *Device Type*, while selecting the third and fifth level will display the current single *Model* information. They are explained in the table below.

	Select Item	Model Information Window Contents
First level	*Instrument*	Display all instrument information.
Second level	*Device Type*	Display the current instrument information that has same *Device Type*, for example the figure above displays all AC Source instruments in the current configuration.
Third level	*Model*	Only display the current single instrument information.
Fourth level	*Sub Device Type*	Same as second level.
Fifth level	*Sub Model*	Same as third level.

4.2.3 Module Information Window

This window displays the instrument *Module* related info, which contains the following three types:

Model Name	Module Information		
	Module Name	Specified Index	Active
Chroma 61600 Series	Chroma 61600 Series	1	True
Chroma 61600 Series	Chroma 61600 Series	2	True
Chroma 61600 Series	Chroma 61600 Series	3	True

1. Single or same *Device Type* instrument *Channel Information*, including instrument *Model Name*, *Channel Number* (*CH*), *Module Name*, *Spec Index* and if Channel is *Enabled*.

Model Name	Module Information		
	Module Name	Specified Index	Active
Chroma 6334	C63303	1	True
	C63303	2	True
	C63302	3	True
		4	True
	C63307	5	True
		6	True

2. Display the *Load Connection* information of current instrument, in which a *row* represents a load connection. The figure below shows the *Spec Index* is 1 and 2 Channel connected. The loading is 40% and 60%. The Channel of *Spec Index*3 is the second load connection and defined in the *Enable* column for the load connection that will be used in the test program.

Connection	Load Connection Information (R1 ~ R12 : distributed ratio[%] of L1 ~ L12)																							Enable
	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	
1	1	2	*	*	*	*	*	*	*	*	*	*	40	60	0	0	0	0	0	0	0	0	0	0	Disable
2	3	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	Enable
3	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	0	0	0	0	0	0	0	0	0	

3. A certain instrument's *Sub Model* information, including *Model Name*, *Channel Number* (*CH*), *Module Name*, *Spec Index* and if Channel is *Active*. This window will display different contents according to different operation methods as the table shown below.

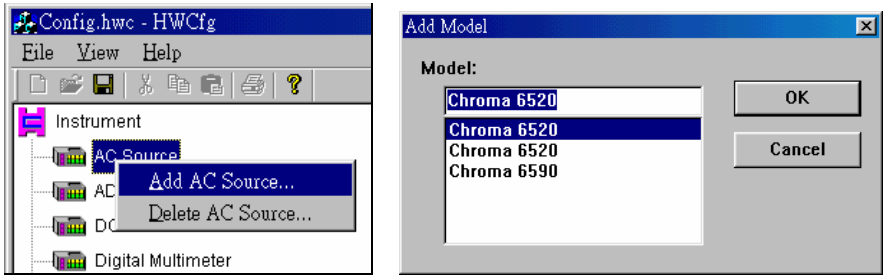
Operation	Select Item	Module-Info Window Contents
Instrument Window	*Instrument*	Do not display any information.
	Device Type	Display all *Models' Channel Information* for the same *Device Type*.
	Model	Display the *Channel Information* of current *Model*.
	Sub Device Type	Display all *SubModels' Channel Information* for the same *Device Type*.
	Sub Model	Display the *Channel Information* of current single *Sub Model*.
Model-Info Window	*Device Type*	Display all *Models' Channel Information* for the same *Device Type*.
	Model	Display the *Channel Information* of current *Model*.
Menu	*[View / Module Information]*	Display *Module Information Window*.
	[View / Load Connection]	Display *Load Connection Window*.

4.3 Operation Description

You can use the Instrument Window in the Hardware Configuration Window to add or remove the instruments. The Instrument, Model Information and Module Information windows can also be used to modify the instrument settings for user interface, communication interface parameter, frequency, etc.

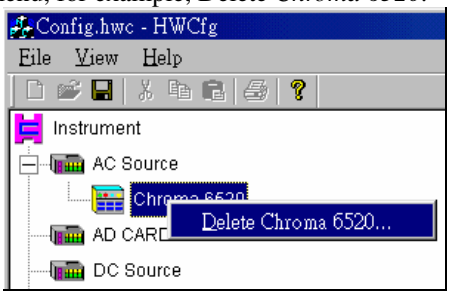
4.3.1 Adding New Instrument

To add new models, you can click the *Device Type* that the new model belongs to under Instrument Window. The function menu will appear, then select '**Add…**' to show the list of instruments, which may change due to different instrument type. The example below is to add a new *Chroma 6520*. Click '**AC Source…**' and it will appear 'Add Model' window. You can select the instrument then click **OK**.

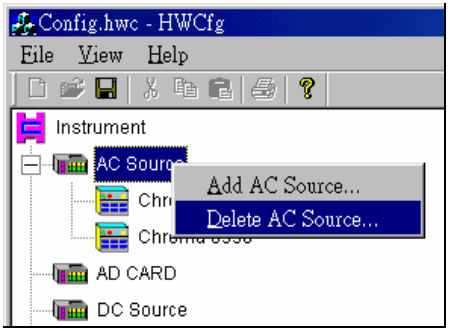


4.3.2 Deleting Instrument

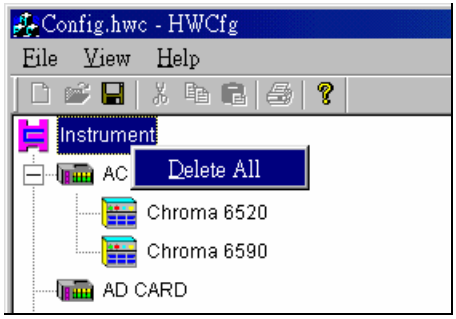
1. To delete a single model, click the instrument you wish to delete and select **'Delete…'** from the function menu, for example, Delete *Chroma 6520*.



2. To delete all models under same *Device Type*, click the *Device Type* you wish to delete and select 'Delete **…**' from the function menu, which may change due to different instrument type. For example, delete all AC Source models.



3. To delete all models, click the item in *Instrument* Window, and select 'Delete All' from the function menu.

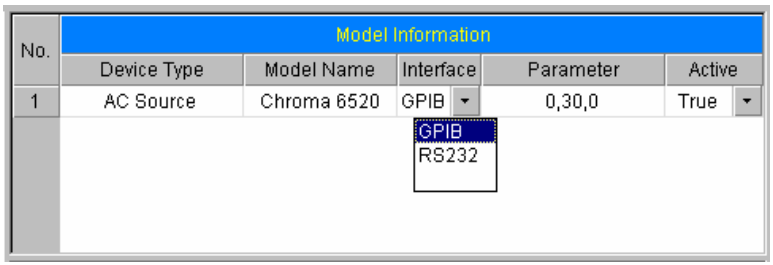


4.3.3 Configuration Setting and Modification

Hardware configuration setting and modification contain device model number, user interface, communication interface parameter, and frequency information, etc. There is no particular sequential relationship among them, however, in some situations when you modify a column, the contents of other column in the same row may be modified as well. For example, when you change the user interface from GPIB to RS232, the Parameter column will change too.

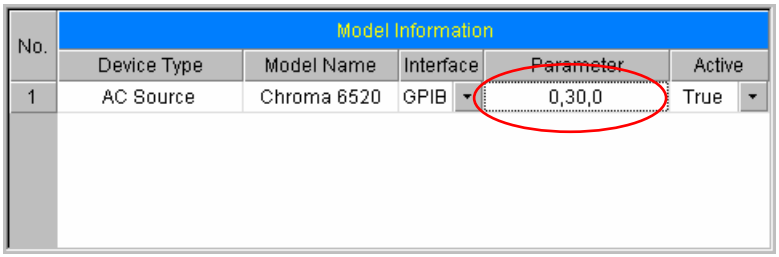
4.3.3.1 Setting User Interface

- There are 7 user interfaces supported: *GPIB*, *RS485*, *RS232*, *IO MAP/PC*, *I2C*, *RS232-I2C* and *USB* interfaces.
- To set it, click the drop-down menu on the Interface column in Model Information Window.



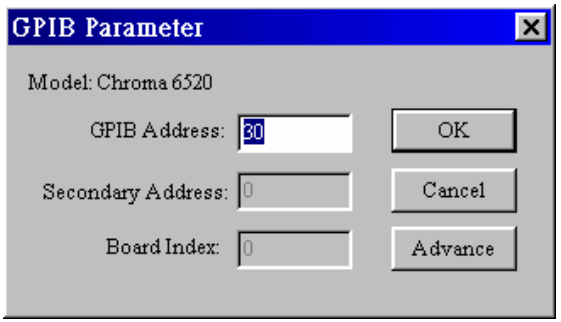
4.3.3.2 Setting Communication Interface

- To set it, double-click the grid under *Parameter* column for the Model you wish to set in the Model-Info Window.

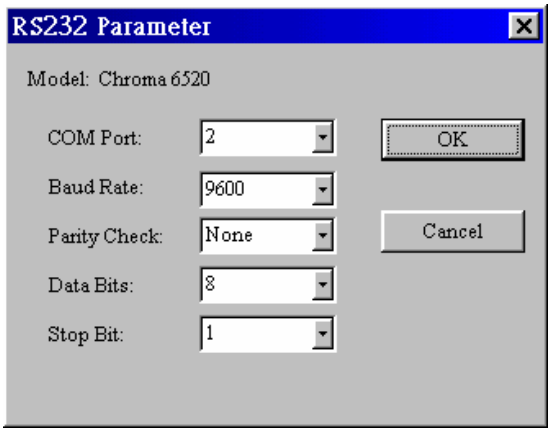


- Different interface shows different parameter setting window.

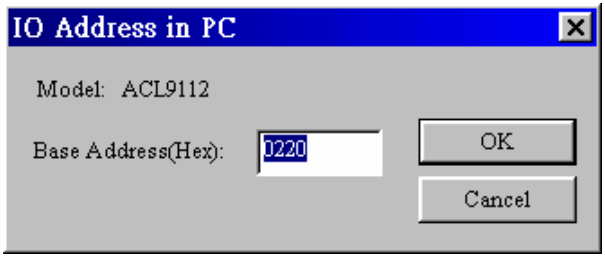
1. GPIB interface:
   When using GPIB interface, generally it only needs to set the main *GPIB Address*.



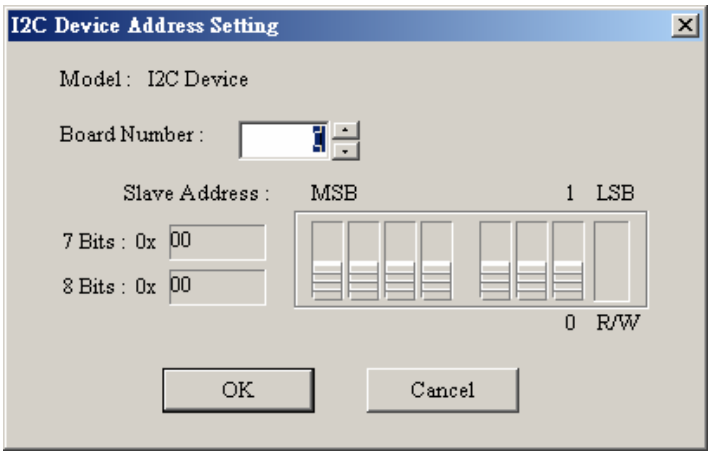
2. RS232 interface / RS485 interface:
   RS485 parameter setting window is shown below. RS232 interface parameter setting window is same as RS485 except without Address parameter.

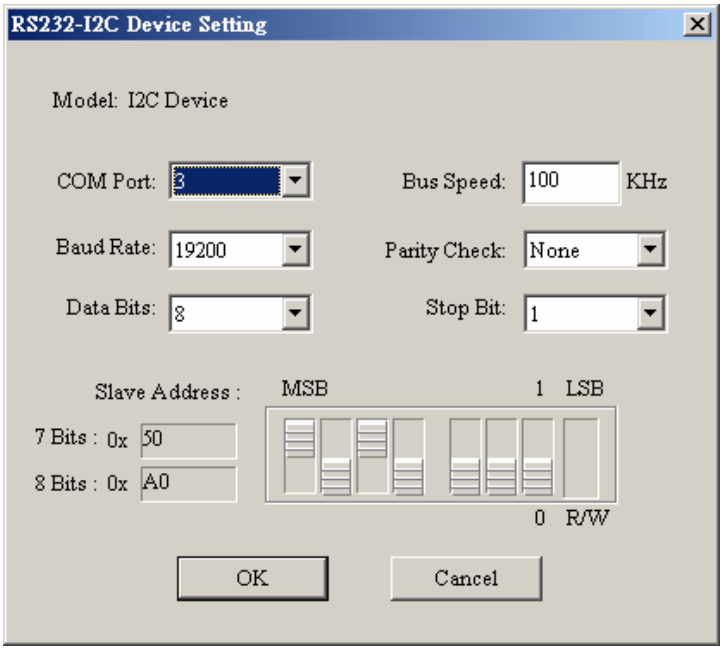


3. IO MAP/PC interface:
   This is an interface card that inserted in the PC. Its parameter setting window is as below.

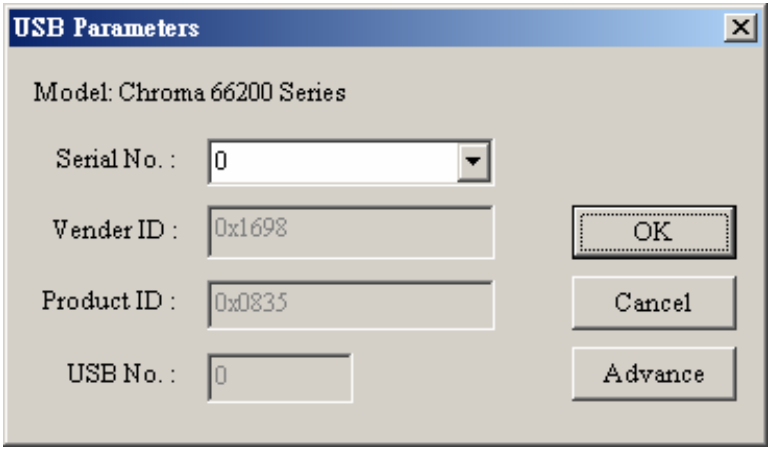


4. I2C/RS232-I2C interface:
   This interface is able to edit the parameters of I2C device. If card is used, the card no. has to be set, and if RS232 is used for connection, it is necessary to set the RS232 parameters. Since there are two normal expressions for I2C Slave Address, please set it follow the actual condition.



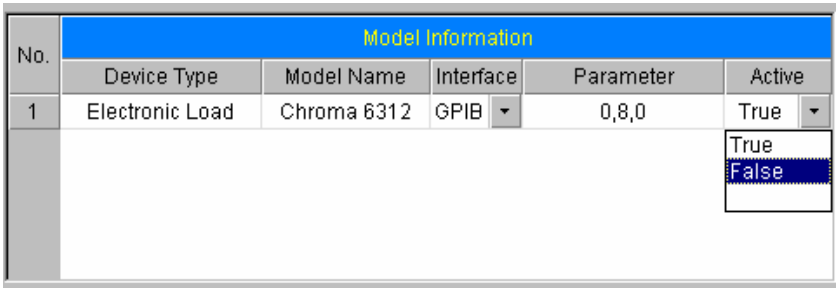


5. USB Interface:
   This interface can only be set when hardware is actually connected. The system in the figure below will detect all serial numbers of this type of hardware on line at present and users has to specify the instrument serial number to be connected.



4.3.3.3 Setting if Active

For the new instrument added in this program, you can set it not to be used during the test process. To set it, click the drop-down menu under the Active column in Model Information Window.



4.3.3.4 Setting Channel Information

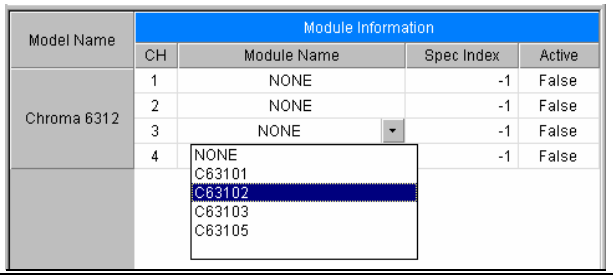
When adding new instruments, the default channel information will be included. The channel information contains *Model Name*, *Channel Number*, *Module Name*, *Spec Index* and if *Active*. You need to complete the setting in Module Information Window described below.

1. Instrument Model Number (*Model Name*)
   Display the instrument model number. You cannot change the contents of this column.

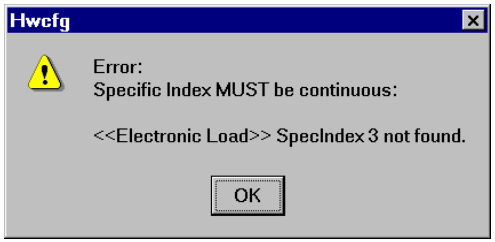
2. Channel Number (*CH*)
   Display the channel number of the instrument. You cannot change this column.
3. Module name (*Module Name*)
   Display the instrument module name. If this *Model* is **unchangeable module**, then it cannot be modified; on the other hand if the Model is **changeable module**, you can use the drop-down menu on the Module Information Window *Module Name* column to add or delete the module.

ⓘ Note

When you use the drop-down menu to add new Models, the program will automatically find and display the modules that fitted to the current status. For example, in the figure below it dose not show *Chroma 63107*, because C63107 will occupy four channels while channel 3 has only 2 channels available (channel 3 & channel 4).



4. *Spec Index*
   Spec Index is used to set the logic number of the instrument's channel during the system test process. If the Spec Index of a channel is 1, it means the channel won't be used in the test process. Please be noted that for the Model in the same *Device Type*, the active Spec Index for Channel has to start from 1, and must be in sequential without duplication. Or, an error message will prompt when saving the file. To modify the Spec Index, you can use the drop-down menu on Spec Index column.



5. If *Active*
   This is to specify if the *Channel* is active during the test process. If yes, the value is **True**, otherwise the value is **False**. Currently it will change following the *Spec Index*. When the *Spec Index* is –1 the value is **False**, which means inactive. While the *Spec Index* is not –1 the value is **True**, which means active.

4.3.4 Loading Connection Setting

During the system test process you can set multi Electronic Loads for load connection (maximum 12 can be set in this system). Before setting, you can use **[View]→[Load Connection]** function options, or point to Module Information Window and click the right mouse button to switch to the 'Load Connection' Window as Figure 4-2 shows.

Connection	Load Connection Information (R1 ~ R12 : distributed ratio[%] of L1 ~ L12)																							
	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	Enable
1	1	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	Disable
2	2	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	Enable
3	3	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
4	4	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
5	5	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
6	6	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
7	7	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
8	8	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	

Figure 4-2 Load Connection Information Window

A row stands for a load connection. L1 to L12 are Load connected, and the "*" filled in means empty. R1 to R12 stand for the loading ratio of load connection, while Enable column shows if the load connection is enabled in the test process. For example, if you set 4 load connections and the first one uses Spec Index for 1, 4, 6 and 8 connection, the loading ratios are 10%, 20%, 30% and 40%. The second connection uses Spec Index for 2 and 3 connected; the loading ratios are 40% and 60% respectively. The third and fourth connections of Spec Index are 5 and 7. Figure 4-3 shows the result.

Connection	Load Connection Information (R1 ~ R12 : distributed ratio[%] of L1 ~ L12)																							
	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	Enable
1	1	4	6	8	*	*	*	*	*	*	*	*	10	20	30	40	0	0	0	0	0	0	0	0	Disable
2	2	3	*	*	*	*	*	*	*	*	*	*	40	60	0	0	0	0	0	0	0	0	0	0	Enable
3	5	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
4	7	*	*	*	*	*	*	*	*	*	*	*	100	0	0	0	0	0	0	0	0	0	0	0	
5	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	0	0	0	0	0	0	0	0	0	
6	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	0	0	0	0	0	0	0	0	0	
7	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	0	0	0	0	0	0	0	0	0	
8	*	*	*	*	*	*	*	*	*	*	*	*	0	0	0	0	0	0	0	0	0	0	0	0	

Figure 4-3 Specifying Load Connection

To change Load Connection you can click the cell that is not "*", and use *Drag & Drop* to change it. After the load connection is changed, please remember to revise the loading ratio as well. You can also set the Active column to specify if use the load connection set in the test process.

ⓘ Note

- Load Connection only affects the Spec Index of Electronic Load Device Type.
- The loading sum of a load connection must be 100%.
- Before setting a load connection, you need to set the Spec Index of Electronic Load first.
- In a load connection, it will only display non –1 Spec Index, which means only active Channel can set the load connection.
- If you don't set the load connection (use default), the program will see every Spec Index as non –1 Channel and as an individual load connection. The loading ratio of that Channel will be 100%.
- After you modified the Load Spec Index, the program will react following the changes of Spec Index. Thus we suggest you to set the load connection after you make sure **all Spec Indexes of the Electronic Load are set**.
- If there is an empty row between two load connections, the program will move the load connection forward when entering next time.
- As the Figure 4-4 shows below, the parenthesis in Spec. Index column means the connection between Logic Channel and sub logic Channel after connected. Take 2 (1) as an example, the number inside the parenthesis stands for the logic Channel (Connection column value) after connected. Thus 1(1) and 2(1) means the logic Channel 1 and logic Channel 2 are connected, but treated as logic Channel 1 is connected.

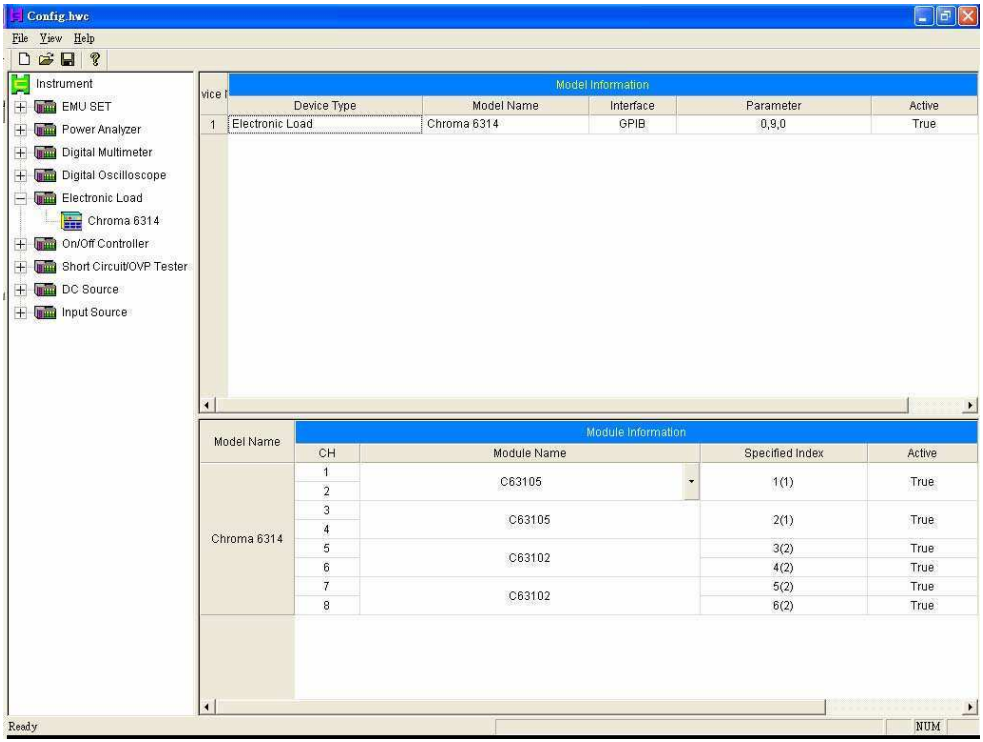


Figure 4-4 Load Module Specified Window

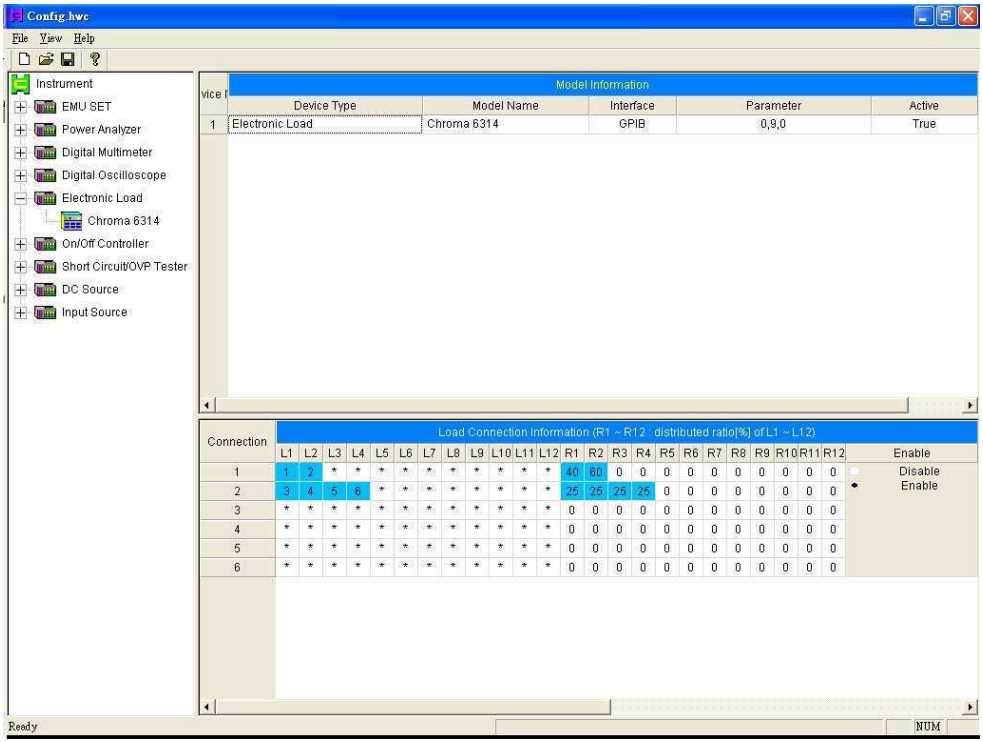


Figure 4-5 Load Connection Specified Window

5. Editing Test Program

Test program (.prg) is composed of many test items with sequence. These test items include the system built-in items and user defined items. SMPS ATS software divided the test items into 3 groups, [Pre Test], [UUT Test] and [Post Test]. Test items in [Pre Test] only execute when the test program runs in the execution environment the first time. [Post Test] test items execute when unloading the test program in the execution environment. As to [UUT Test] test items, they will be executed every time the test program runs. There are three steps to create new test program.

1. Follow the execution sequence to select the test items needed.
2. Edit the execution flow of the selected test items, including
   - Pass Goto
   - Fail Goto
   - Fail Retry
   - Loop To
   - Loop Cycle
3. Set the parameters for each test item.

Below introduces the operation of test program editor window.

5.1 Getting Started

In SMPS ATS software main menu, select **Test Program** option in Basic group, the program will inquire you if you want to create a new test program, or open an existing test program.

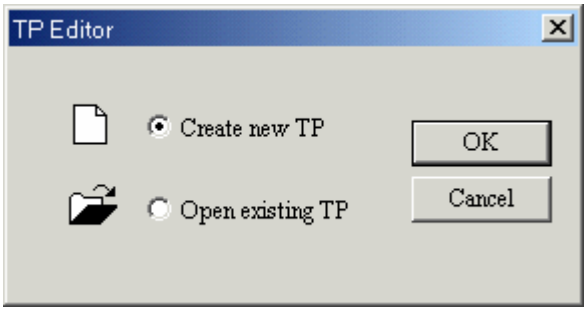


Figure 5-1 Create New or Open Dialog Box

5.1.1 Creating New Test Program

If you select 'Create new TP' option, or click **Program Info...** in the test item editor, the dialog box of Figure 5-2 will show up. It will ask you to enter the information for the new test program. Here explains the major items.

Date	This item is in **General** tab indicating the date that the new test program is created.
Time	This item is in **General** tab indicating the time that the new test program is created.
Report Format File	This item is in **Link** tab to specify the report format file (*.rpf) used when printing report on-line. This file type is generated by 'Report Editor'.
Fixture Model	This item is in **Link** tab to select the test fixture model name that used when performing the test or leave it blank. When a model is specified, the GO/NOGO program will check if the test fixture model same as the one defined in the test program as well as the remaining usage count before testing a UUT.
Total Load Numbers	This item is in **UUT Setup** tab indicating the Load Channel number used in the test program. This number should not be larger than the Local Channels defined in 'Hardware Configuration'.
Load Name	This item is in **UUT Setup** tab indicating the show name of every Load Channel for each UUT.
Reverse	This item is in **UUT Setup** tab where checked means it is reversed and unchecked means it is not reversed.
Comments	This item is in **General** tab for entering the notations of the test program.
UUT Type	This item is in **UUT Setup** tab. It supports Single UUT / Multi Output and Multi UUT two types of test programs. All Test Result variables must be in Load Array data type when Multi UUT is set or the Test Item is unable to use. The item of Identical Test Condition can also be selected to indicate that all test conditions are the same when Multi UUT is set, and all test conditions need to be entered respectively if it is not selected.
Output Numbers	This item is in **UUT Setup** tab and can only be used under Multi UUT. This item is to set the number of outputs each UUT has to define the test program to be Multi UUT/Single Output or Multi UUT/Multi Output. Be noted that the Output Numbers must be the factor smaller than Total Load Numbers.

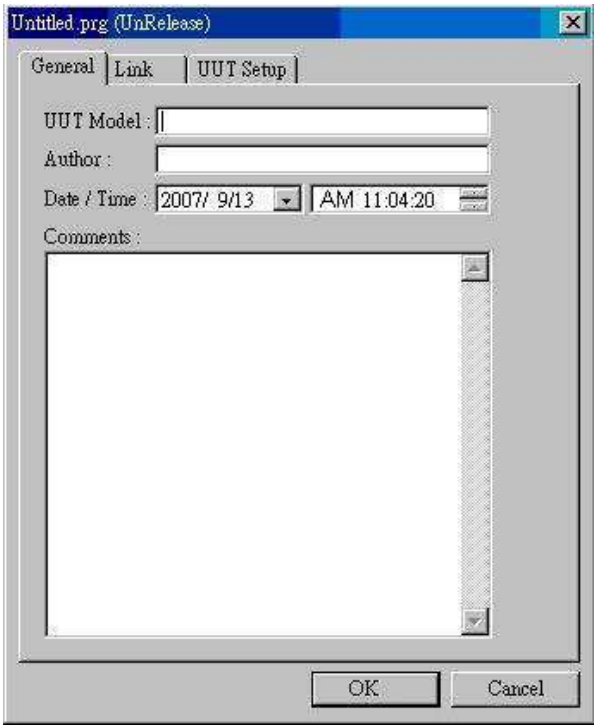


Figure 5-2 Test Program Information Dialog Box

In the test program editor, some columns are editable. Double click the column you want to edit can enter into the editing mode. After you finished entering the columns, click **OK** to enter the main menu for test program editing.

5.1.2 Opening an Existing Test Program

If you choose 'Open existing TP' option, or click **[File]** → **[Open]** from the main menu later, it will generate the dialog box as Figure 5-3. It requests for the test program you want to open. You can enter the test program name (without .prg) directly or select it from the list box.

Release	For the test program not yet released, you can use the same filename to save. For the released test program, it will request you to use another filename to save it. You can use the 'Management' program to modify this column.
Date and Time	The last time the test program was modified.

After specified the test program you want to open, click **OK** or double-click the test program to enter the main menu and start editing.

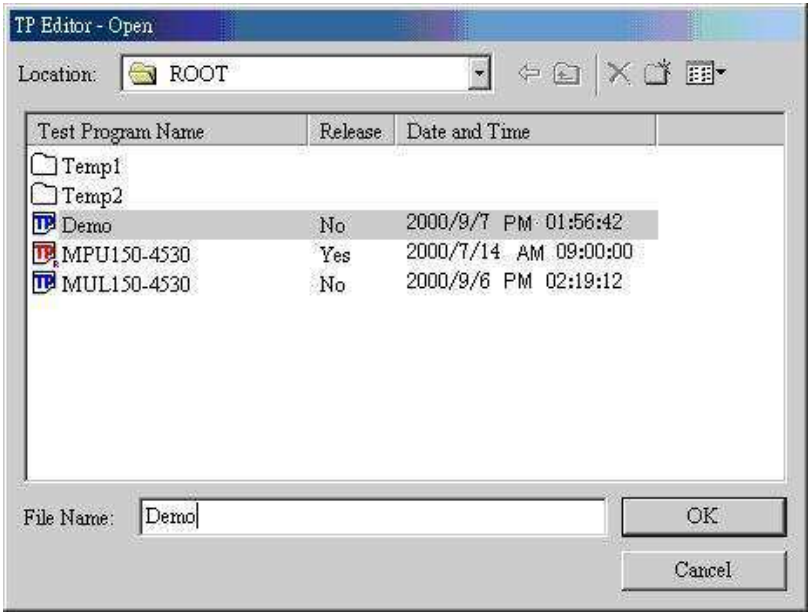


Figure 5-3 Open an Existing Test Program Dialog Box

5.1.3 Main Menu

The main menu contains two parts as shown in Figure 5-4. The left part is test item editing area, where the name of the edited test program shows on its top. If the program name has (*) in it, it indicates the program has been modified but not yet saved. Click **Program Info…** will show the *Test Program Information Dialog Box* as Figure 5-2. There are three tabs, [Pre Test], [UUT Test] and [Post Test] under the test program. The test program execution will follow this sequence.

The main menu right portion displays the test items list at the beginning, which has two tabs. The test items in **System** tab are included when system shipped by default and the test items in **User** tab are for you to edit.

Besides test items list area, you can click **Parameter** on the toolbar to switch to the test parameter editor or click **Vector** to switch to vector editor, or click **Global Pa.** to switch to global parameter editor. The detail descriptions of global parameter editor are in the section

beneath.

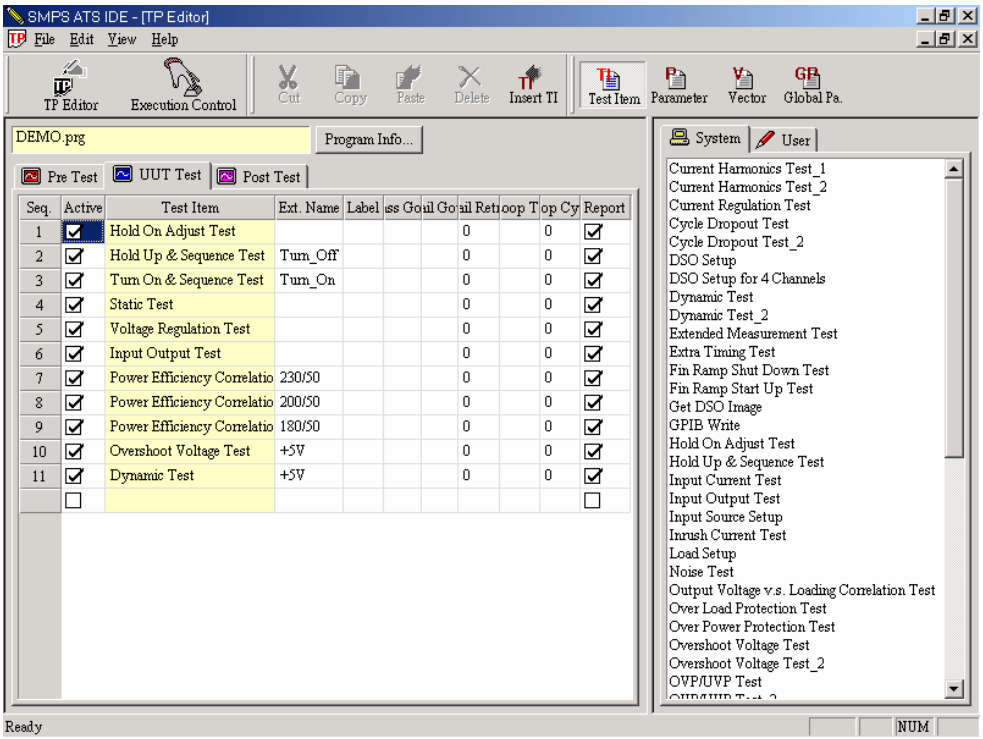


Figure 5-4 Test Program Editor Screen

5.2 Adding and Editing Test Items

5.2.1 Adding Test Item to Test Program

Test item is added by insertion. First click the place you want to insert in the test item editor. Assuming it is Seq 3, double-click the test item list area for the test item you need or click **Insert TI** on the toolbar after selecting the test item. Then it will be added to Seq 3 and the original Seq 3 will be pushed to Seq 4, and so will the rest of the test items.

5.2.2 Cutting, Copying, Pasting, Inserting and Deleting Test Items

To facilitate users and avoid repetition work in editing test item, the program provides the note pad function for test item editor.

Cut	Put the selected test item in the memory for next step use, and delete it.
Copy	Put the selected test item in the memory for next step use, and keep it.
Paste	Add the selected test item to the place you want to insert it, and the original one will be pushed to next Seq.
Delete	Delete the selected test item.

You need to select an item before performing the above functions. Click the Active column of the selected test item, the row will be reversed which means it is selected. You can hold down the **Ctrl** or **Shift** key and drag for multiple selections. If you want to delete the selected test item, click **Delete** on the toolbar and a dialog box will prompt to confirm if you want to delete it. Click **Yes** to complete the deletion, or click **No** to cancel.

If you want to insert the selected test item to a certain Seq, you need to click **Cut** or **Copy** on the toolbar to memorize the selected test item. Then click the Seq column where the test item will be inserted, and click **Paste** on the toolbar. Please be noted that the **Paste** function key only enables when there is a test item in memory.

5.2.3 Execution Flow for Editing Selected Test Item

The test item editor is in table format. Including the left header, there are 10 columns as explained below.

Seq	Sequence number of test item. Normally the test program executes following the number sequence from small to large.
Active	Check the item to determine if the test item will be executed.
Test Item	Name of the test item.
Ext. Name	Additional description.
Label	Specify a particular test item to be used with Pass Goto, Fail Goto and Loop To in order to control test item's execution flow.
Pass Goto	This column can specify an existing label. When running tests, if the test item passes, it will jump to the test item specified by a label in the column for continuous test. If no label is specified, it will follow the Seq number to run the test.
Fail Goto	This column can specify an existing label. When running tests, if a test item fails, it will jump to the test item specified by a label in the column for continuous test. If no label is specified, it will follow the Seq number to run the test.
Fail Retry	This column can be filled in with an integer. When running tests, the integer is the retest number will be done if a test item fails. This function's priority is higher than Fail Goto, Pass Goto and Loop To. This means it will execute Fail Retry then Fail Goto, Pass Goto and Loop To.
Loop To	When running tests, if the test item column specified an existing label (must be specified before Seq), it will jump back to the test item specified by the label. This becomes a loop. For the number of times it loops should be defined in the Loop Cycle column. If no label is specified, it will follow the Seq number to run the test.
Loop Cycle	The number of loop cycle (Note 5.1).
Report	Specify if it shows the test item on the report when the **Report Generator** is creating a report of the test data.

Note 5.1: If users wish to repeat the test items Seq 3 to Seq 5 for 5 times:

Seq	Test Item	Label	Loop To	Loop Cycle
:				
:				
3	TestItem A	A		
:				
5	TestItem B		A	5

5.3 Setting Parameters for Test Items

Test item parameters and their types are declared in the Test Item Editor. The parameter types contain floating point, integer, character, string and percentage with two new parameters, Vector and Global, which have special editing screens. We suggest users to enter these two screens for editing first, and then start setting the test item parameters after completing the edit.

5.3.1 Editing Vector Entry

When editing the test item parameters, you will find that you have to input some parameters repeatedly. To save your time in doing such work, SMPS ATS software introduces a new parameter type – Vector. In your test program, you only need to edit the entry data for different type Vectors, then any test item in the program that has declared the Vector type variable can choose an entry data in this type for use.

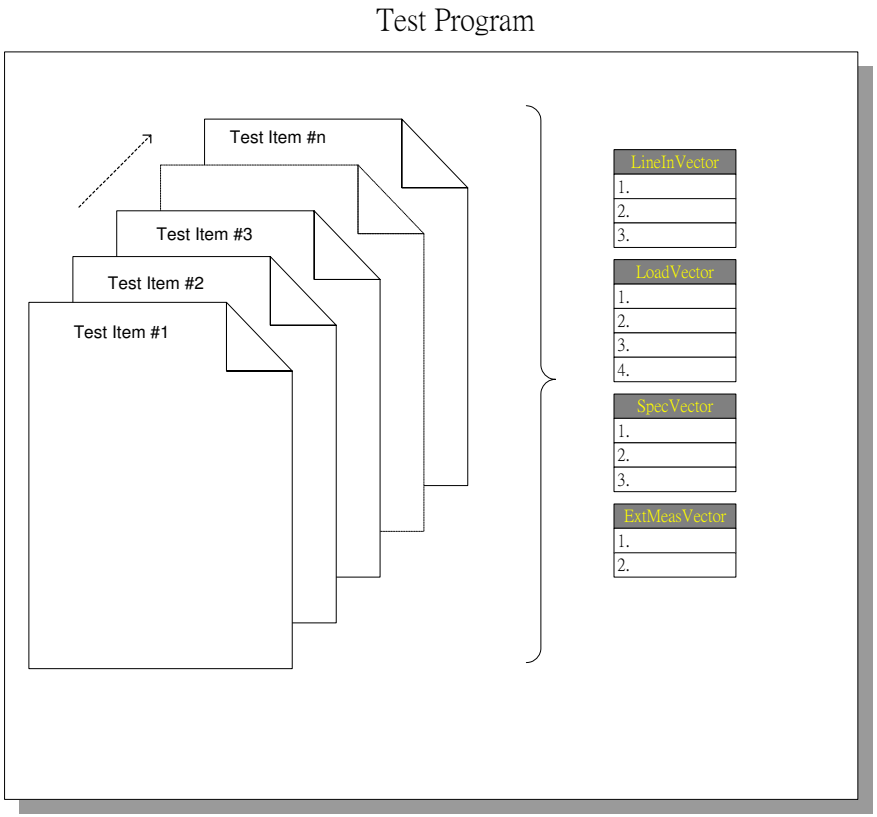


Figure 5-5 Vector and Test Program Diagram

You can click **[View]→[Vector Editor]** from the main menu or **Vector** on the toolbar to switch to Vector Editor as Figure 5-6 shows. The **Vector Set Select** drop-down menu can let you select the Vector type you want to edit. There are four default Vectors, 'Line In Vector', 'Load Vector', 'Spec. Vector' and 'Ext. Meas. Vector' when system ships. Take 'Line In Vector' for example, the first row on the table is Vector Name, and the next is the two components, Voltage and Frequency in 'Line In Vector'.

If you need to add a new Vector entry, click the bitmap **Append** button on the top, a new Vector entry data will be added in the table. Its default name is "Line In Vector 1", but you can modify it. The name will be used when you edit the test parameter. You can also modify the default values that are set before shipment for Voltage, Frequency and Range.

To remind you again that in 'Test Program Editor' you can double-click the column to enter into the edit mode if the table column is editable.

The way to edit 'Load Vector' is similar to the above. The major difference is that the Load Vector number (the loading of each channel) is set following the Total Load Numbers in Figure 5-2 Test Program Dialog Box.

To delete a Vector entry, you can click the entry data to be removed and then click the bitmap **Delete** button on the top to delete it.

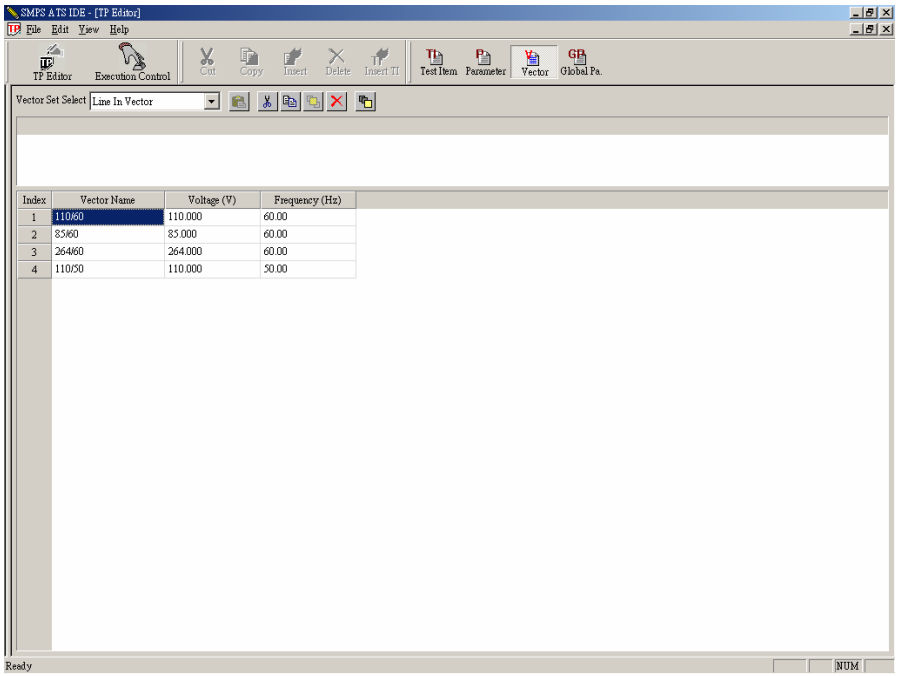


Figure 5-6 Vector Editor Screen

5.3.2 Editing Global Parameter

To transfer parameters between two different test items, the parameters have to be set as Global Parameters. The action is done by 'Test Item Editor', while the 'Test Program Editor' is to define the initial value for these Global Parameters to use in test item.

You can select **[View]→[Global Pa. Editor]** from the main menu or click **Global Pa.** on the toolbar to switch to Global Parameter Editor as Figure 5-7 shows. The **Global Parameter's Name** in the table with pale yellow backdrop is not editable. The row number

changes following the Total Load Numbers set in Figure 5-2 Test Program Dialog Box. For the Global Parameter belongs to Load you need to enter a value per Channel, and for those not belong to Load you only need to enter one value and the rest of the cells will turn gray.

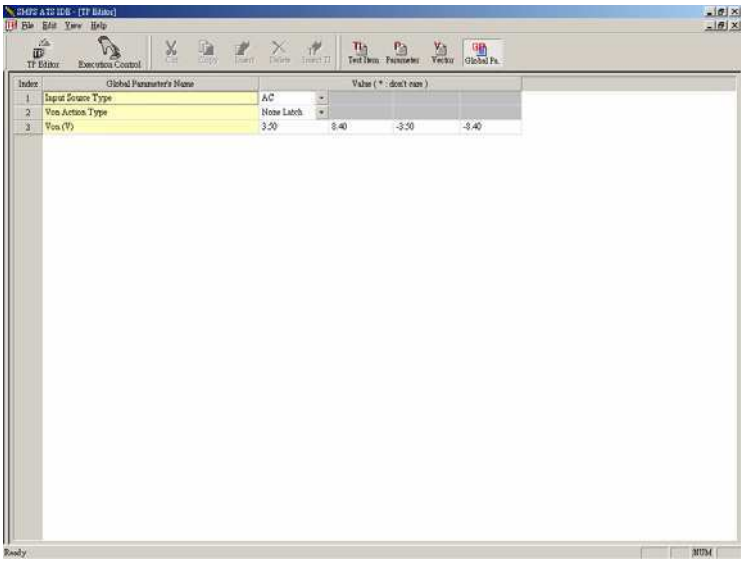


Figure 5-7 Global Parameter Editor Screen

5.3.3 Editing Test Condition Parameter

You can click **[View]→[Parameter Editor]** from the main menu or **Parameter** from the toolbar, or double-click the Test Item on the test item editor to switch the right pane to test parameter editor as shown in Figure 5-8. The two panes on the screen are cross-referenced. Please click the test item you want to edit in 'Test Item Editor', or use the arrow keys on keyboard to move the cursor to the test item you want to edit. Now the screen right pane will display all test item parameters in the test parameter editor.

Show Name with pale yellow backdrop in the table is not editable. The Value column is where you input the parameter. The value first displayed is default, which was defined in Test Item Editor. Following are the three ways to input a parameter value.

Edit	Double-click the column you want to edit to enter into the editing mode.
Combo Box	Click the right downward arrow key from the combo box, a menu will show up for your selection.

Array Type For Load parameter, you need to input a value for every Channel if it is Array type. Due to space restriction, the column is extended to above of the screen, and the column number is the Total Load Numbers defined in Figure 5-2 *Test Program Information Dialog Box*. Please click the column that displays 'Click here'; then point to the column above the screen and start editing the parameters.

You can use Combo Box to edit Vector type parameter. When you click the downward button in Combo Box, the menu shows the Vector Name you've edited previously for your selection.

Some parameters will be compared with Test Result during the test process. The editing type of these parameters is Edit. If you double-click the parameter column to enter the edit mode and key in '*', it means you request the execution environment to ignore the comparison action.

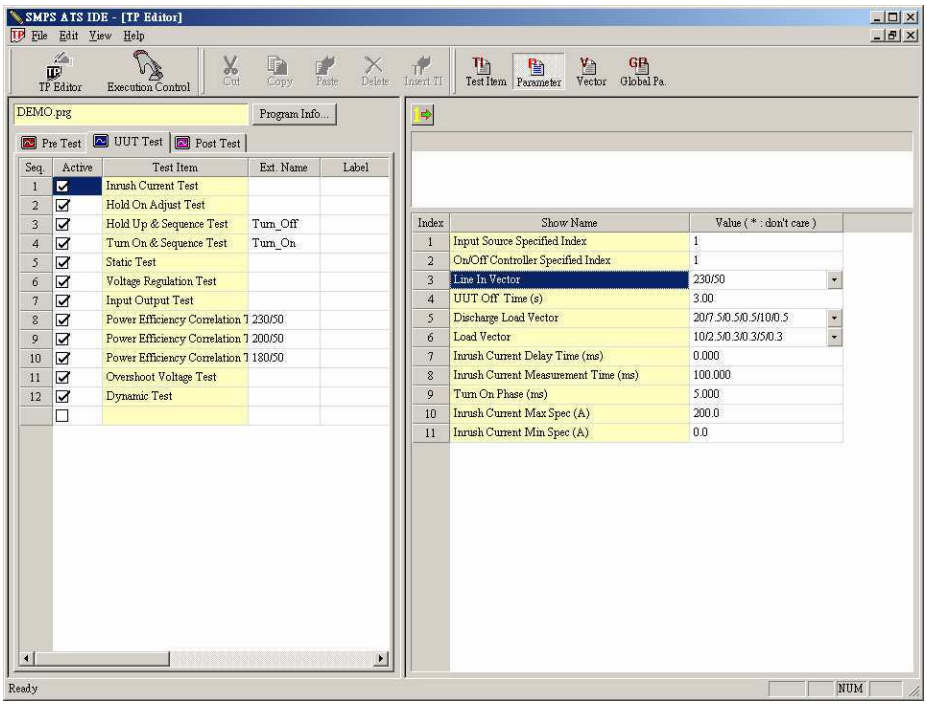


Figure 5-8 Test Parameter Editor Screen

5.4 Printing Test Program

Test Program Editor provides a simple print function to let you print out the edited test program. The printout contents contain the following three parts.

1. The contents in Figure 5-2 Test Program Information Dialog Box.
2. Print out all names of test items following the order of [Pre Test], [UUT Test] and [Post Test].
3. Print out all parameters of test items following the order of [Pre Test], [UUT Test] and [Post Test].

You can click **[File]→[Print Preview]** from the main menu to preview the contents you want to print, and click **Print (P)...** on the preview window for printing or click **[File]→[Print]** from the main menu to print it directly.

5.5 Saving File

To save the test program you've edited, you can click **[File]→[Save]** or **[File]→[Save As]** from the main menu. The difference in-between is the former will use the filename you specified in Figure 5-9 dialog box, but it only prompts at the first save not afterwards. The later assumes you want to use different filename to save the file, thus it displays the dialog box every time to request you specifying the filename.

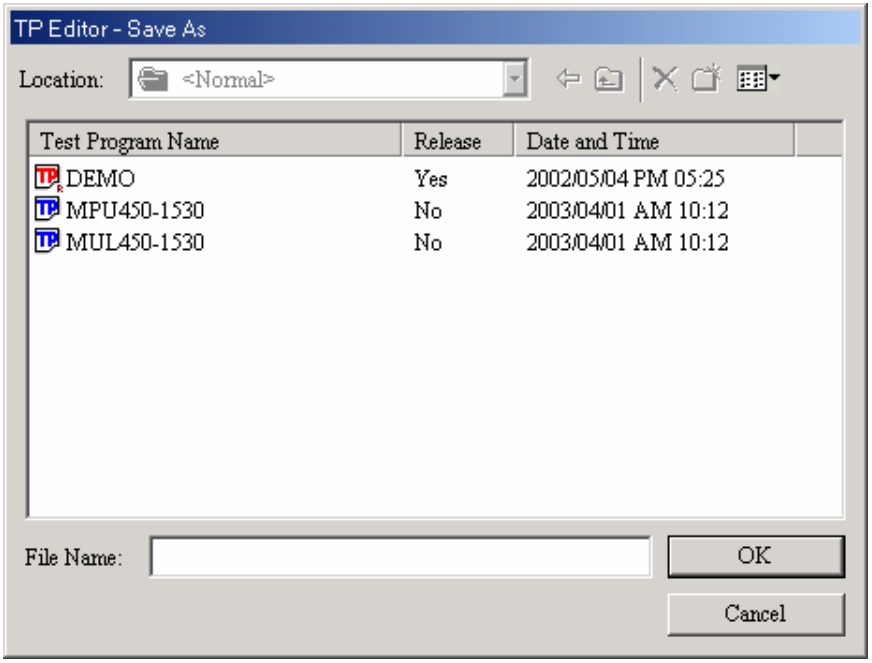


Figure 5-9 Save As Dialog Box

Please notice that for unreleased test programs you can use the same filename for saving, and for the released test programs, you will be asked to save them using other names. You can decide if a test program can be released using the 'Management' program in system.

5.6 Universal Test Program

A number of customers expect the PowerPro III system software supports a Universal Test Program that can build in the test conditions for various Models with same test procedures. Users can specify different model for test according to the actual requirements. The feature of it is that users can utilize Microsoft Access 2000 to edit the contents of Universal Test Program without using the Test Program Editor to edit the conditions and specifications. Thus it is mostly applied to the test of series models with same test items and procedures. The differences are the test conditions and specifications mentioned previously. Yet, there are risks that PowerPro III system is unable to control this kind of test programs for releasing. Therefore, users must maintain the test programs of this type carefully to avoid any data inconsistency.

5.6.1 Entering the Universal Test Program Editing Mode

Click **[Edit]→[Option]** from the main menu to open the dialog box as shown in Figure 5-10.

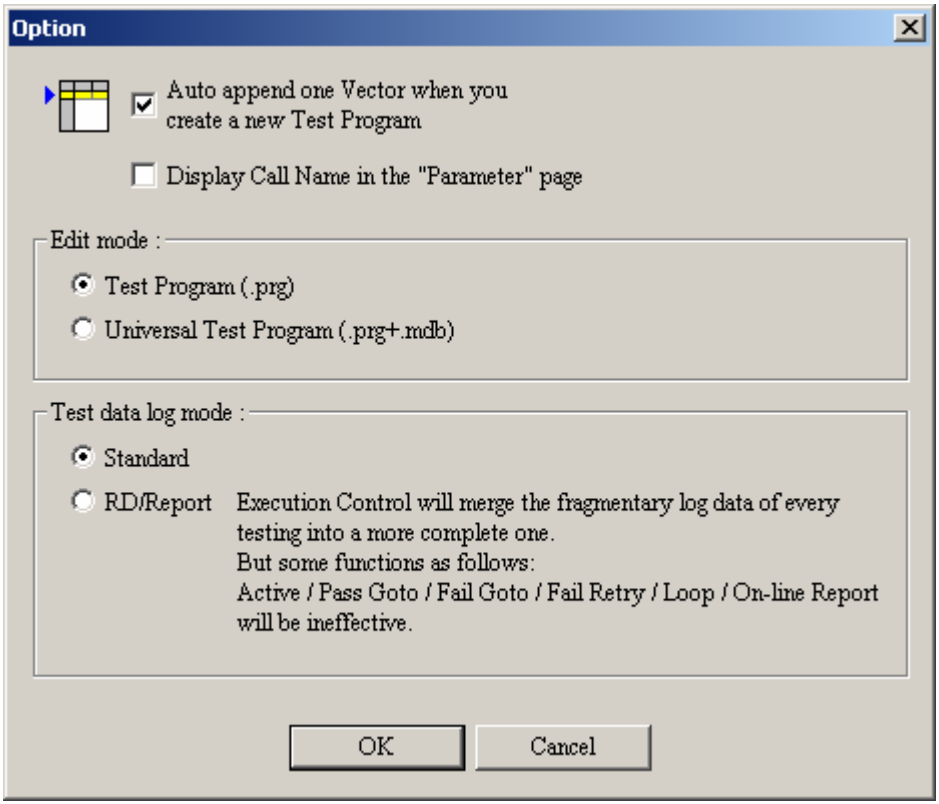


Figure 5-10 Option Dialog Box

Select **Universal Test Program(.prg+.mdb)** for Edit mode and the item for Test Program Editor to edit is changed to Universal Test Program.

5.6.2 Adding a Universal Test Program

Besides the .prg file, a .mdb file is also needed for a Universal Test Program. Assuming there is .mdb file in the 8000 system, it is suggested to follow the description below to have the Test Program Editor create it for you.

Click **[File]→[New]** the test program information dialog box will prompt as Figure 5-11 shows. Following is the description of the major items:

UTP Database	If a .mdb file is already exists in the 8000 system, choose **Select an existing .mdb file**, otherwise select **Create a new .mdb file**. The Test Program Editor will create a .mdb when saving the test program.
Max Load Numbers	It is for Test Program Editor to edit the Load Array variable. As the Channel number used for actual test is defined by the Models set in .mdb, so the inputted number of Load Channel here should be the maximum of all models.

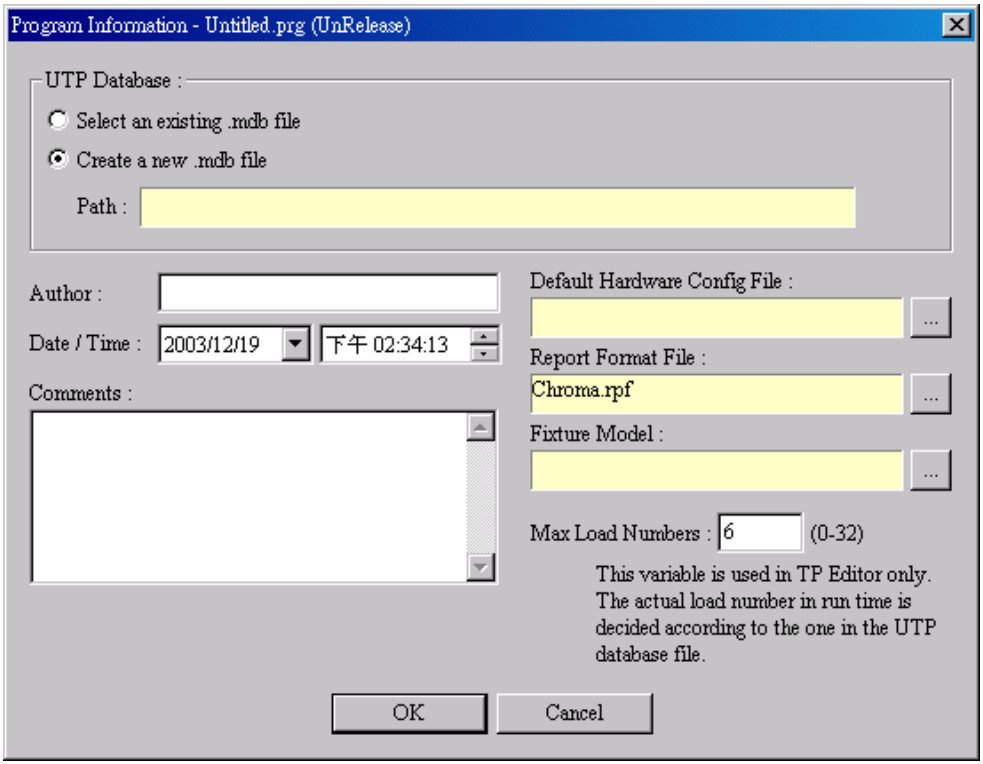
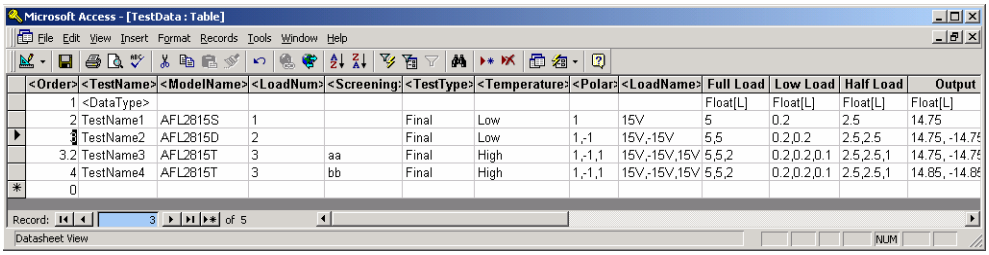


Figure 5-11 Universal Test Program Information Dialog Box

Click **OK** to edit the test program by adding the desired test items. If the test conditions and specifications are not ready for .mdb file, it is suggested to save the file and exit the editor until they are ready.

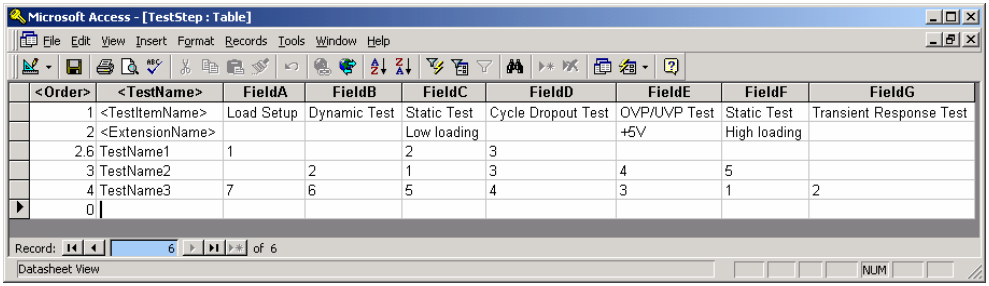
As the selection in Figure 5-11 is to **Create a new .mdb file** so the Test Program Editor will ask the location for saving the .mdb. It is suggested to save it to the directory of **\UTP\Db** in case of misplacing. Next use Microsoft Access 2000 to set the test conditions and specifications for the .mdb file. The .mdb has two tables, [TestData] and [TestStep]. The columns with <> cannot be changed for the name attribute or deleted.



<Order>	<TestName>	<ModelName>	<LoadNum>	<Screening>	<TestType>	<Temperature>	<Polar>	<LoadName>	Full Load	Low Load	Half Load	Output
1	<DataType>								Float[L]	Float[L]	Float[L]	Float[L]
2	TestName1	AFL2815S	1		Final	Low	1	15V	5	0.2	2.5	14.75
3	TestName2	AFL2815D	2		Final	Low	1,-1	15V,-15V	5,5	0.2,0.2	2.5,2.5	14.75, -14.75
3.2	TestName3	AFL2815T	3	aa	Final	High	1,-1,1	15V,-15V,15V	5,5,2	0.2,0.2,0.1	2.5,2.5,1	14.75, -14.75
4	TestName4	AFL2815T	3	bb	Final	High	1,-1,1	15V,-15V,15V	5,5,2	0.2,0.2,0.1	2.5,2.5,1	14.85, -14.85
0												

Figure 5-12 [TestData] Table

In the table of [TestData] each row is a model, and a **<TestName>** is given to each model for **GO/NOGO** execution. The column of **<LoadNum>** is the Load Channel number of different model. Starting from the right of **<LoadName>** column users are able to add new test conditions and specifications columns using the Entry Name as the column name for instance, Full Load, Low Load or Half Load. The Entry Name will appear in the drop down menu for selection when entering the Test Program Editor next time. Each entry has its **<DataType>** including Float, Integer, Float(%), Short, Float[L], Integer[L] and Float(%)[L] 7 types. The Test Program Editor will pick the Data Type matched Entry to add it to the drop down menu.



<Order>	<TestName>	FieldA	FieldB	FieldC	FieldD	FieldE	FieldF	FieldG
1	<TestItemName>	Load Setup	Dynamic Test	Static Test	Cycle Dropout Test	OVP/UVP Test	Static Test	Transient Response Test
2	<ExtensionName>			Low loading		+5V	High loading	
2.6	TestName1	1		2	3			
3	TestName2		2	1	3	4	5	
4	TestName3	7	6	5	4	3	1	2
0								

Figure 5-13 TestStep Table

In the table of [TestStep], starting from the right of **<FieldA>** column lists the test items for Universal Test Program. They should be same as the one seen in Test Program Editor; however the execution number and sequence are defined according to the index of each TestName row.

Close the .mdb file will return to the parameter editing screen in Test Program Editor. Once the Edit Type of a parameter is set to **Import** in **Test Item Editor**, the drop down menu will be applied to the parameter and the same Data Type entry will be selected in .mdb [TestData] table to be placed in the drop down menu. Users can select one of the Entries from the column as the Full Load in Figure 5-12.

5.7 Menu Description

[File]→[New]	**:**	Add a new test program.
[File]→[Open…]	**:**	Open an existing test program.
[File]→[Save]	**:**	Save the test program you are editing. For the new test program with filename ' Untitled', it will prompt a 'Save As' dialog box for you to specify the filename.
[File]→[Save As…]	**:**	Save the edited test program to another filename.
[File]→[Import Vector…]	**:**	Import the vector from other test program.
[File]→[Export Vector To EXCEL…]	**:**	Export the vector edited in the test program to Excel.
[File]→[Print All Seq.(s)…]	**:**	Display when the sequence list area is opened and print all of the edited sequences.
[File]→[Print Current Selected Seq…]	**:**	Display when the test parameter editing area is opened and print the sequence the cursor is at only.
[File]→[Print Preview…]	**:**	Preview the print result of edited test program.
[File]→[Print Setup…]	**:**	Setup printer.
[File]→[Print To File(*.txt)…]	**:**	Save the edited test program and its variable to txt file.
[File]→[Exit]	**:**	End test program editing and return to SMPS ATS main menu.
[Edit]→[Cut]	**:**	Memorize the selected test item for next step use and delete it.
[Edit]→[Copy]	**:**	Memorize the selected test item for next step use and keep it.
[Edit]→[Paste]	**:**	Insert the selected test item to the place you specified and the original test item will be pushed down to next Sequence.
[Edit]→[Delete]	**:**	Delete all selected test items.
[Edit]→[Insert Test Item]	**:**	Insert a test item from the test item list area at right to the left screen.
[Edit]→[Option]	**:**	Prompt the Option dialog box. Users can select if the function of "Add an initial value to each type of vector

when creating a new test program" to be enabled. Users can also set to use Standard or RD/Report mode when switching to the **Execution Control** for test program verification.
It also sets to edit the standard test program or Universal Test Program.

[View]→[Edit Toolbar]	**:**	Set if displays the toolbar.
[View]→[Status Bar]	**:**	Set if displays the status bar.
[View]→[Test Item List]	**:**	Switch to test item list area.
[View]→[Parameter Editor]	**:**	Switch to test Parameter Editor.
[View]→[Vector Editor]	**:**	Switch to Vector Editor.
[View]→[Global Pa. Editor]	**:**	Switch to Global Parameter Editor.
[View]→[Reset Client Size]	**:**	Return the main menu left and right proportion to default.
[Help]→[Contents]	**:**	Display the table of contents for the online documentation.
[Help]→[About TP Editor…]	**:**	Display the version information of this program.

6. Verifying Test Program and Test Item

This chapter describes the verification environment of executing test programs (or test items.) It tells you how to use Execution Controller to perform detail tests on the edited test program (or test items.) Detail test means the real-time test on the test program edited by TP Editor or on the test items edited by TI Editor. During the test process it will not log the test program readings to database, but provide more control functions than GO/NOGO program for users to find the designing problems in the test program (or test item) more efficiently.

6.1 Executing Control Program Main Menu

In SMPS ATS software main menu, click **Test Program** in Basic group and select the test program you want to edit by clicking **Execution Control** button on toolbar, it will show the window in Figure 6-1. Similarly you can also do it to a test item by clicking **Test Item** in Advance group, and select the test program you want to edit by clicking **Execution Control** button, it will show the window in Figure 6-2.

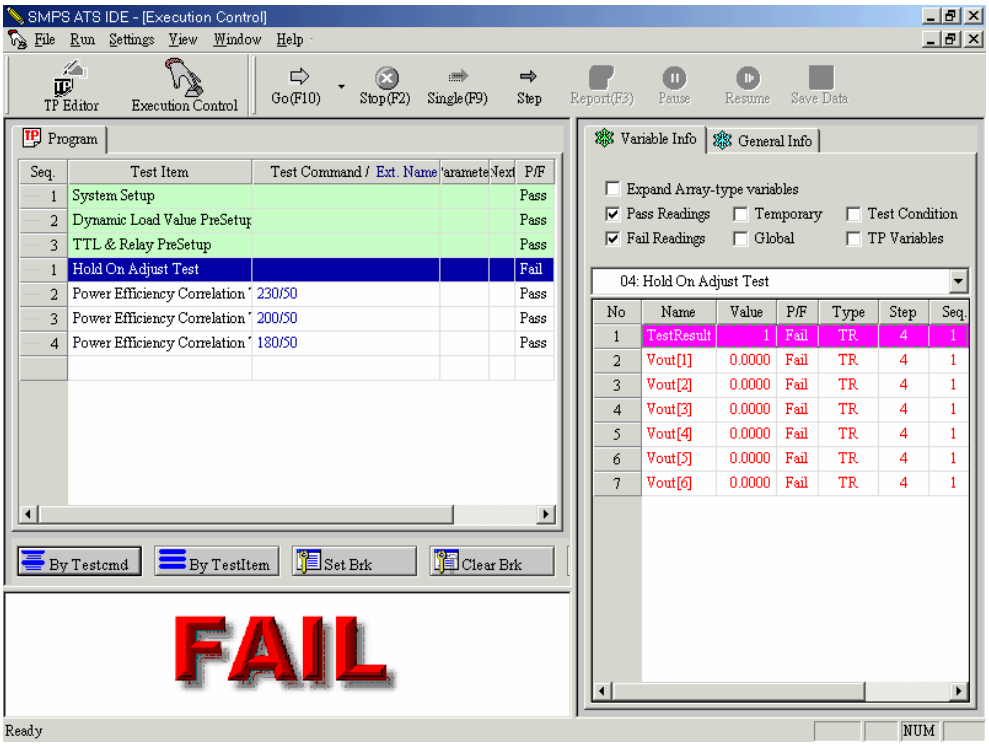


Figure 6-1 Detail Test for Test Program Execution Control Screen

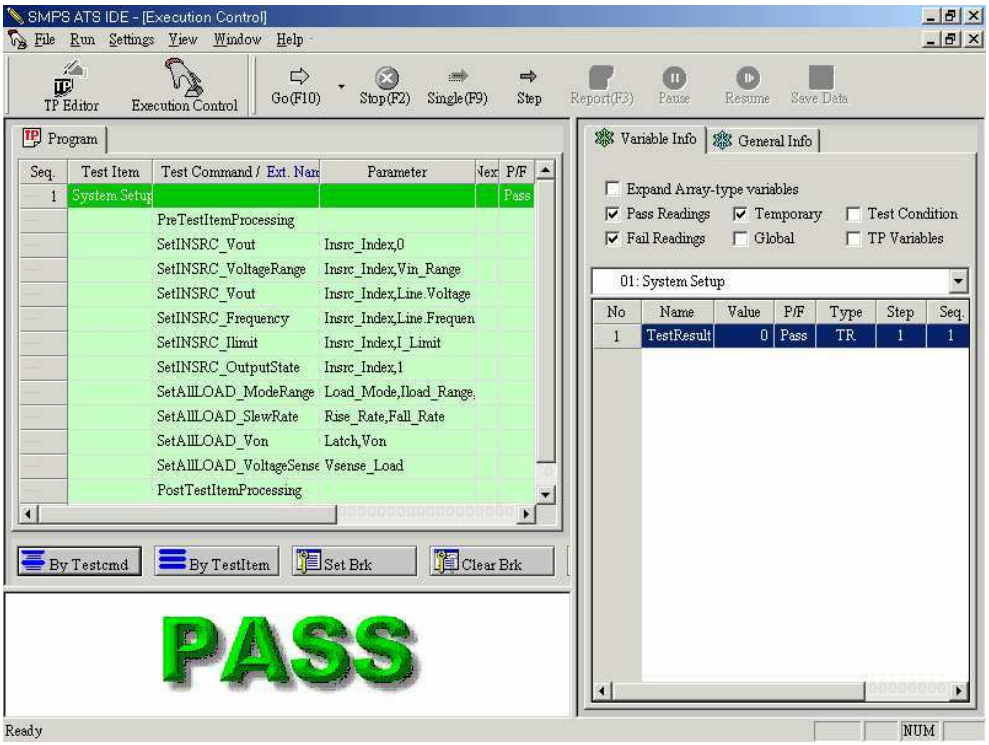


Figure 6-2 Detail Test for Test Item Execution Control Screen

The Detail Test screen arrangement in Execution Control is same as GO/NOGO, please see Chapter 7 *Executing Test Program (GO/NOGO)*. In Detail Test, the test contents display area shows all variables of that page. When edits in TI, the default is to expand various test commands; and the default displays up to test item when edits in TP. Similarly you can double-click a test command to get the test command expansion function.

- **Program Display Area:**
  Detail Test in the main menu has three more buttons than GO/NOGO program that provide you with set/cancel Break Point function.

Set Brk	Set the break point for test command. After setting the break point, an icon (yellow line in the middle) will appear in the line to show the test command is set as break point.
Clear Brk	Clear the break point in the test command.
Clear all brks	Clear the break point in the test item.

You can point to the test command you want to set break point and click **Set Brk**, **Clear Brk** or **Clear all brks** button. Then you will see a small flag appears on the selected test command, which means you have set a break point. You can also click the right mouse button on the test command to select **Set Brk**, **Clear Brk** and **Clear all brks** functions from the menu item for break point setting and canceling.

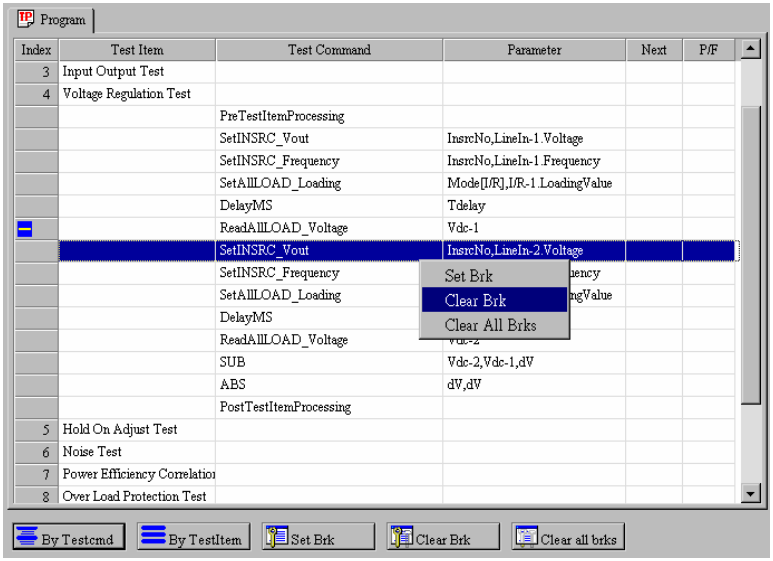


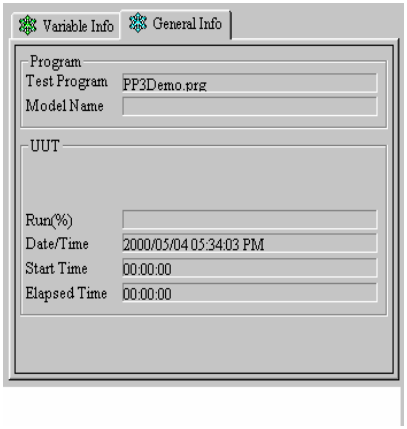
Figure 6-3 Break Point Setting

- **Process Display Area:**
  Same as GO/NOGO.

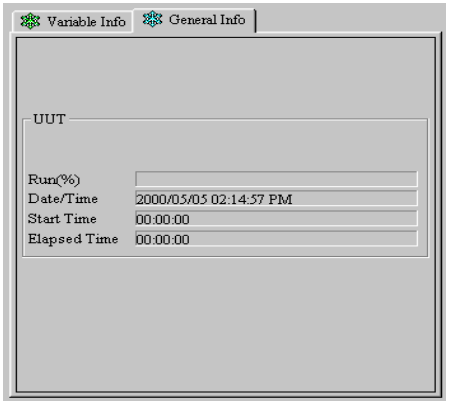
- **Test Contents Display Area:**
  Detail Test in Test Contents Display Area is to display the various variable contents.

  Test Item Variables in Test Program
  Each variable's presentation is same as GO/NOGO operation.

  Setting for Test Execution
  The Detail Test used with Test Program Editor is as below.



The Detail Test used with Test Item Editor is as below.



6.2 Setting Test Execution Functions

This section covers the functions of Execution Control. Execution Control toolbar is the operating center to control the execution or stop operation of a test program.

There are 8 buttons in the Detail Test toolbar when used with Test Program Editor, **Go(F10)**, **Stop(F2)**, **Single(F9)**, **Step**, **Report(F3)**, **Pause**, **Resume** , **Save Data** as the figure shown below.

The button's function is same as GO/NOGO, while Detail Test has two more buttons, **Step** and **Save Data**.

Step	Run the test command step by step.
Save Data	Save the testing data in RD/Report Mode.

The figure shown below is in the status of executing interruption at the break point or paused by user in execution flow.

An icon  (red line in the middle) will appear at the break point to show the current break point.

Users can execute **Stop**, **Step** and **Resume** functions only.

For the rest Detail Test functions, please see *Chapter 7 Executing Test Program (GO/NOGO)*.

7. Executing Test Program (GO/NOGO)

This chapter describes the environment for test program execution. It explains how to use Execution Controller to perform GO/NOGO tests with the edited test programs. During the test process it will pass the test result to On-line Report Generator for report output. Execution control program will log the test result to database for future statistics process control analysis and off-line report printing.

7.1 Execution Control Main Menu

Click **GO/NOGO** on the SMPS ATS main menu will activate the execution control program immediately. Execution Control Program will activate 'H/W Configuration' to initialize all configured devices and display the result on the test process display area at lower left part of the window.

Figure 7-1 is the execution control main menu.

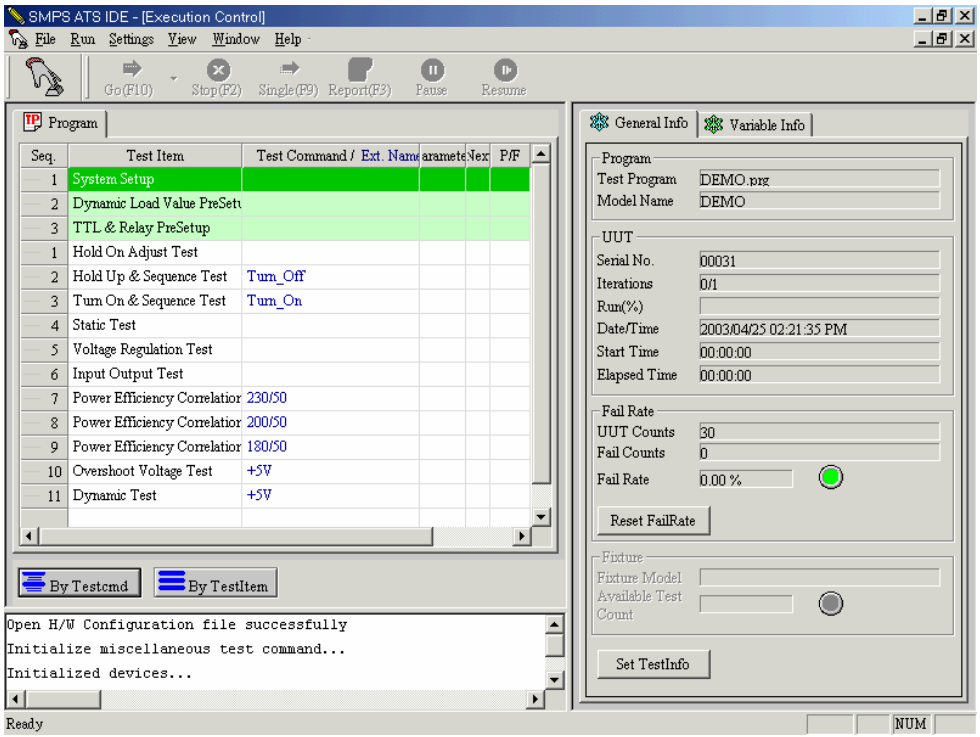
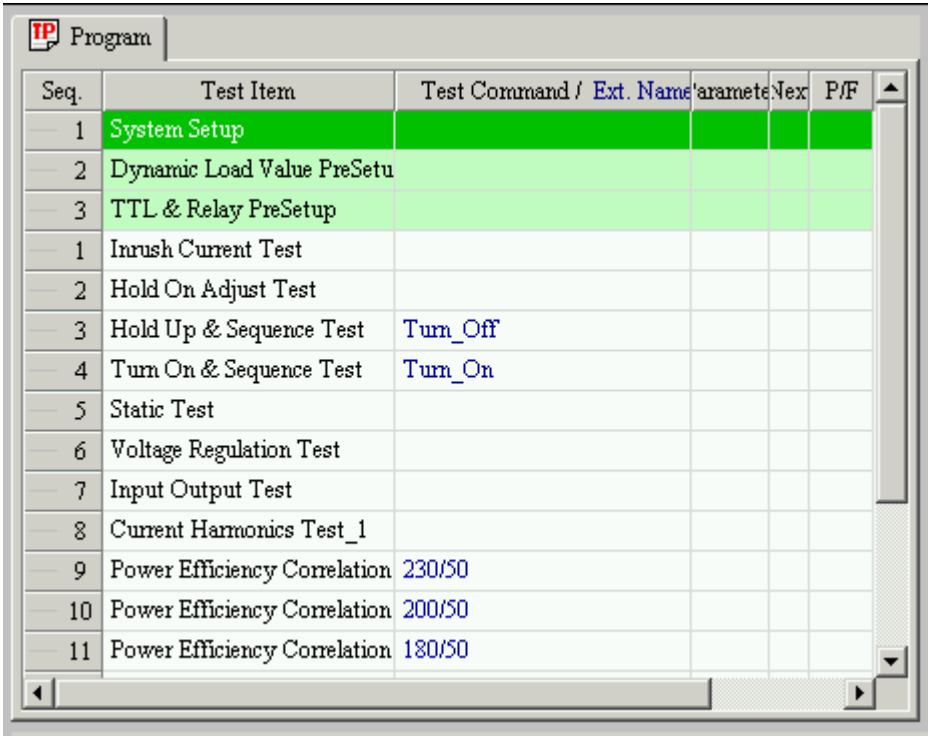


Figure 7-1 Execution Control Main Menu

Execution Control Program main menu is composed of three parts including Program Display Area, Process Display Area and Test Contents Display Area counterclockwise.

- **Program Display Area:**



Display all test items of the opened test program in the table. The row to be executed will display in darker color during execution.

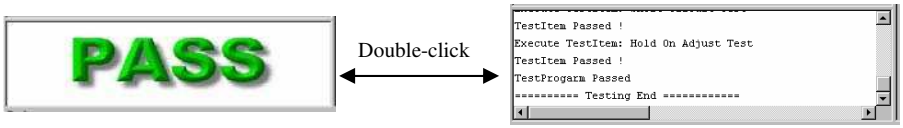
There are 6 columns in the table. The first column is the test item sequence in test program. The second column is the name of test item. The third column is the test item command. The fourth column is the parameter for test command. The fifth column displays the process control setting for test program, and the sixth column displays the result after running the test item.

You will see some test items are in lighter color, this means they are set not to execute in the program.

In GO/NOGO test, the default for opening a test program is to display test items instead of test commands. You can click **By TestCmd** to expand the test commands or click **By TestItem** to hide them. You can also double-click any line in the table to expand/hide the test commands of that test item.

- **Process Display Area:**

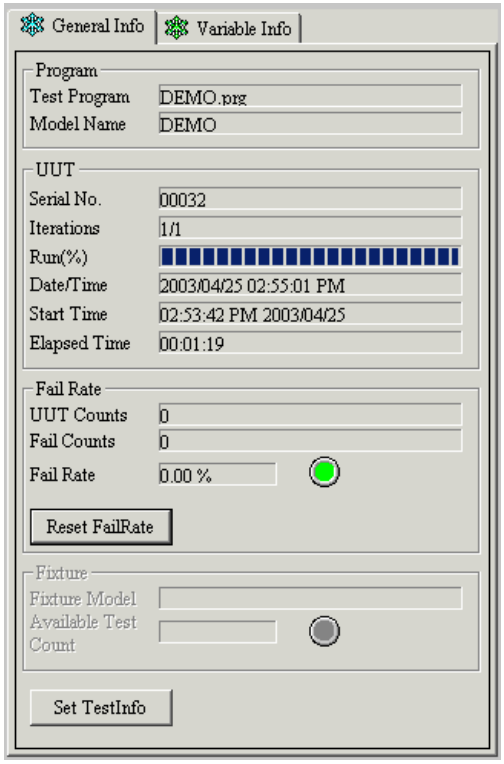
  Double-click this area can switch the display of execution process text and result. You can see the execution process by the text displayed or the test result in graphic text.



- **Test Content Display Area:**

  Test Content Display Area is composed of two parts. The first part displays the general settings for executing test and the second part displays the defined variables in the test program after execution.

  Setting for Test Execution



Program Section

- Test Program : Name of the test program.
- Model Name : Model name of the test program.

UUT Section

- Serial No. : UUT's serial number.
- Iterations : The number for executing the test program. (Executed times/Total execution times)
- Run (%) : The percentage of the execution progress.
- Date/Time : The current system time.
- Start Time : The time to start test.
- Elapsed Time : The time spent for test.

Fail Rate Section

- UUT Counts : The counts of tested UUT.
- Fail Counts : The counts of UUT that failed the test.
- Fail Rate : The ratio of UUT that failed the test.

When the Fail Rate over the condition set, the green light next to Fail Rate will turn red and blink to remind you the UUT Fail Rate is over the limitation set.

Set TestInfo Prompt the Setting dialog box when modifying the test. The function of this button is same as selecting menu **[Settings]→[Test Information…]**.

Reset FailRate Recount the Fail Rate. Reset the UUT Count to zero and recount the Fail Rate. The function of this button is same as selecting menu **[Settings]→[Reset FailRate]**.

Fixture Section

- Fixture Model : The fixture model name you selected in **TP Editor**.
- Available Test Count : The available test count of the current fixture.

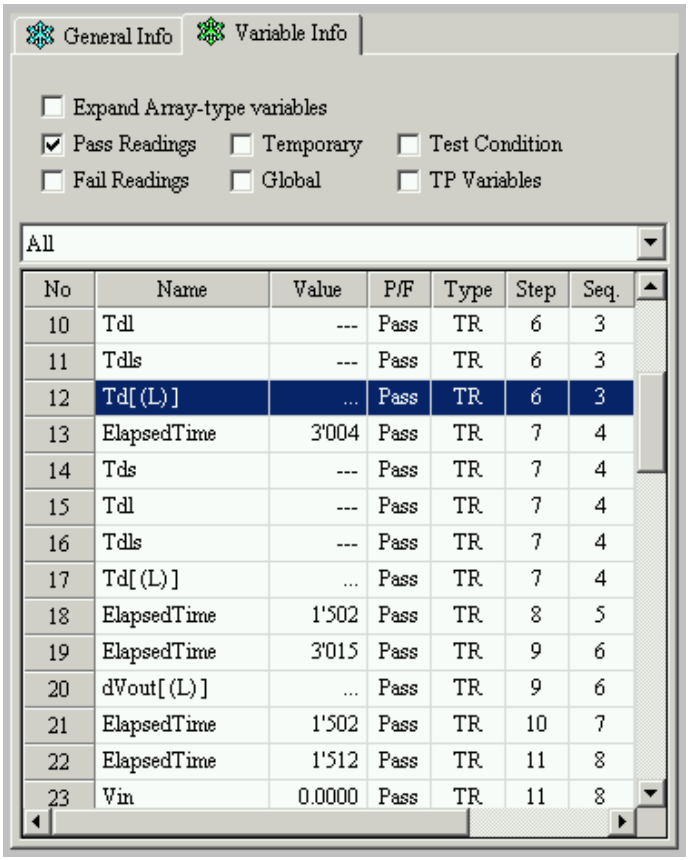
Test Item Variables in Test Program

For the tested item, every setting and reading can be found in the 'Variable Info' in Test Content Display Area. There are seven options in the screen for you to select the variable categories you want to look into and expand the array variable components.

☐Expand Array-type variables Select this item to show every value in array when displaying array variables. Otherwise, it will show the variable name.

☐Pass Readings	Select this item to display the readings of Test Result variables that meet the specifications.
☐Fail Readings	Select this item to display the readings of Test Result variables that do not meet the specifications.
☐Temporary	Select this item to display Temporary variables.
☐Global	Select this item to display Global variables.
☐Test Condition	Select this item to display Test Condition variables.
☐TP Variables	Select this item to display the variables in test program.

The tested item are placed in the drop-down menu in the order of execution sequence. You can select a test item and observe the variable value.



No	Name	Value	P/F	Type	Step	Seq.
10	Tdl	---	Pass	TR	6	3
11	Tdls	---	Pass	TR	6	3
12	Td[(L)]	...	Pass	TR	6	3
13	ElapsedTime	3'004	Pass	TR	7	4
14	Tds	---	Pass	TR	7	4
15	Tdl	---	Pass	TR	7	4
16	Tdls	---	Pass	TR	7	4
17	Td[(L)]	...	Pass	TR	7	4
18	ElapsedTime	1'502	Pass	TR	8	5
19	ElapsedTime	3'015	Pass	TR	9	6
20	dVout[(L)]	...	Pass	TR	9	6
21	ElapsedTime	1'502	Pass	TR	10	7
22	ElapsedTime	1'512	Pass	TR	11	8
23	Vin	0.0000	Pass	TR	11	8

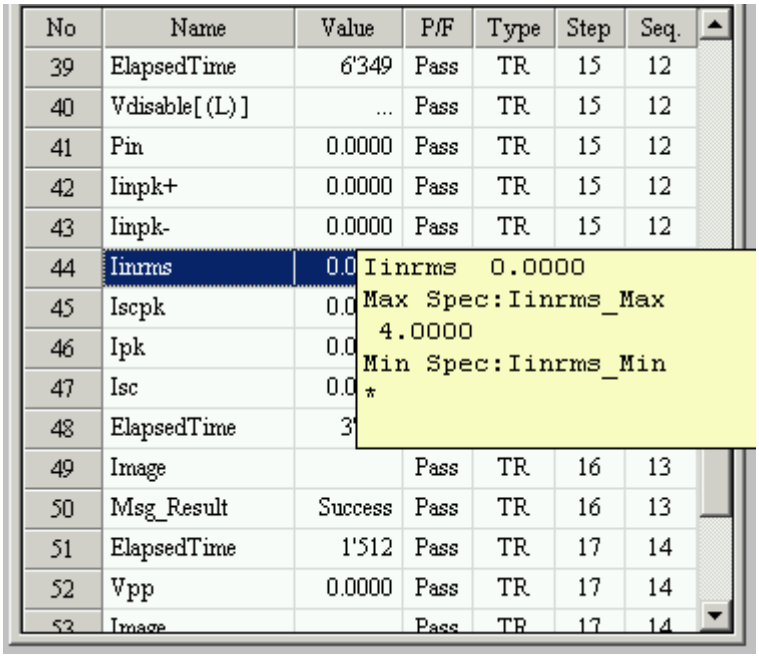
The table in the middle will fill in with the test items specified in the drop-down menu and various variable definitions with values. The table is divided into seven columns. The first column is the variable sequence. The second column is the variable name. The third column is the variable value. The fourth column is the specification judgment. The fifth column is the variable type. The sixth column is the test item sequence and the seventh column is the test item sequence in the test program.

In the variable name column, if the variable is an array type variable and is not expanded, (L) will be added to the name indicating this is a Load number array variable. If the variable name has (4), it means the array variable contains four components. The digit indicates the array variable numbers. If the variable is in expanded mode, then every variable name will add [n], where n means the number of array variable.

In second column it presents the variable contents. If the value is "…" and an array type variable, you can double-click the variable to expand or hide the array variable contents.

The third column indicates if the Test Result variable meets the specification.
The fourth column shows the variable type, which "TR" is for Test Result variable, "TC" is for Test Condition variable, "G" is for Global variable, "T" is for Temporary variable, "TC(V)" is for Vector Type Test Condition variable, "T(G)" is for Vector Type Global variable, and "TP(V)" is for Test Program's Vector variable.

Click the first column you will see the detail variable description.



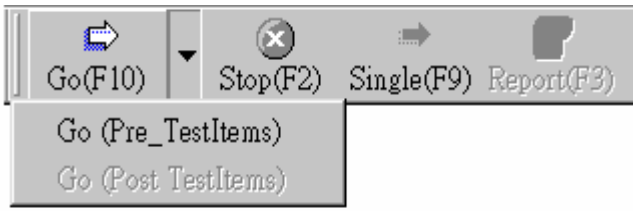
7.2 Setting Test Execution Function Options

This section covers the functions of execution control toolbar. Execution control toolbar is the control center for test program execution or stop operation.

The toolbar has four buttons available for use as following.

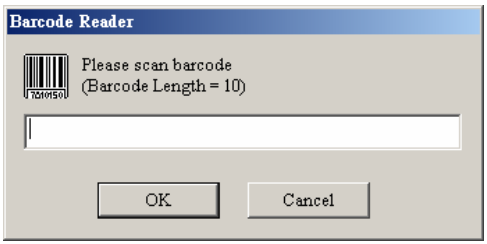
Each function is described below.

Click **Go(F10)** or F10 on the keyboard to start the test program from the first test item, and save the test result to data after execution. If there is any PreTest type Test Item, it will execute it once at the first time. You can also click ▼ next to Go(F10) to run the test items in [Pre Test] group.

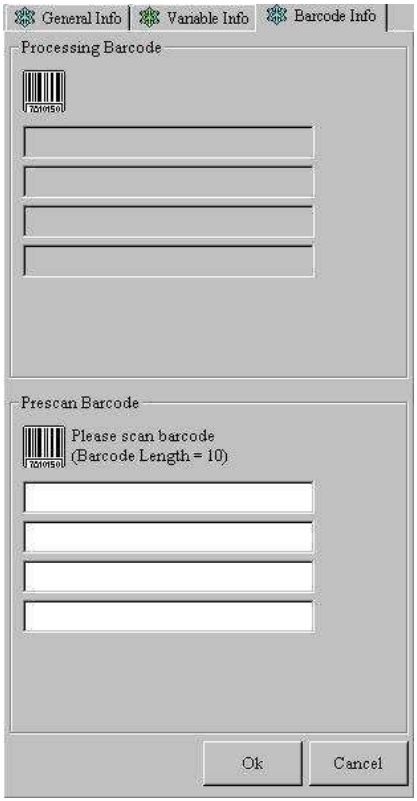


Notice:

- When you select serial number Auto Count, it will automatically add one.
- When you select Barcode for count, if Enable prescan multi barcode is not selected click this button will prompt the window below to receive the UUT serial number scanned by Barcode Reader.



- When you select Barcode for count, if Enable prescan multi barcode is selected click this button will prompt a window as shown below. The Prescan Barcode area can let you prescan the UUT's serial number using Barcode Reader during test. The Processing Barcode area displays the UUT's serial number that processed currently (it supports Multi-UUT only at present.)



- When the test program is running, it cannot end the execution control function. If you want to end the execution control function, please click **Stop(F2)** button first to stop the test program execution, and then end the execution control function.
- After the test program execution completed, all instruments will return to their initial state, in the mean time the AC Source will stop the power supply for UUT to exchange.

Click **Stop(F2)** or F2 on the keyboard to end test execution, the result will not log to database.

Notice: All instruments will return to their initial state, and in the mean time, AC Source will stop the power supply for UUT to exchange.

Click **Single(F9)** or F9 on the keyboard to start executing the specified test item.

Before you click this button, you need to select the test item you want to execute in the test program display area. You can use mouse to select the test items you need.

Notice: Before using **Single(F9)** to execute a test item, you should run the test items associated with "Set up" to enable AC Source for power supply.

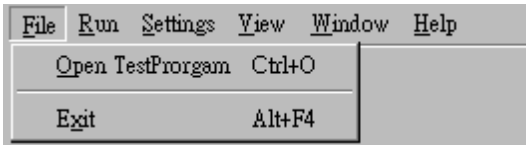
Click **Report(F3)** or F3 on the keyboard to switch to report editor. You can see the executed report display through report editor.

The two buttons **Pause** and **Resume** do not work in GO/NOGO. **Pause** and **Resume** are provided for Detail tests use.

7.3 Operation Button Functions Description

This section explains the function of execution menu for various environment setting.

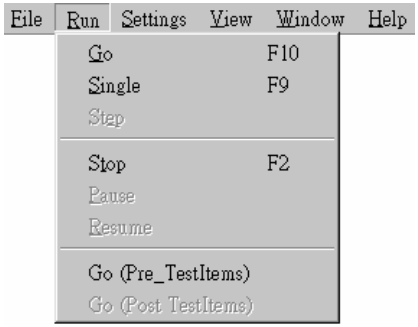
7.3.1 File Menu



[File]→[Open Test Program]	Mnemonic key (Ctrl + O). Use dialog box to open the edited test program.
[File]→[Exit]	Exit the program and back to SMPS ATS software main menu.

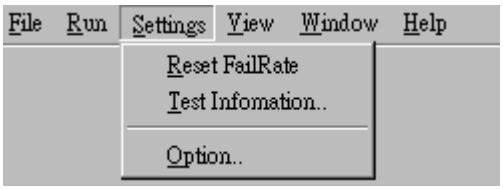
Notice: File menu won't be able to use if hardware initialization fails. Please examine the hardware setting and restart the execution control program.

7.3.2 Run Menu



[Run]→[Go]	Alternative key, F10. Executes test program from the first test item and save the tested result to database. Its function is same as the **GO** button in execution control toolbar.
[Run]→[Single]	Alternative key, F11. Executes the test item specified. Its function is same as the **Single** button in execution control toolbar.
[Run]→[Step]	For Detail test use.
[Run]→[Stop]	Alternative key, F2. End the test, and the test result will not log to the database. Its function is same as the **Stop** button in execution control toolbar.
[Run]→[Pause]	For Detail tests use.
[Run]→[Resume]	For Detail tests use.
[Run]→[Go(pre_TestItems)]	Run Pretest Test Items in test program.
[Run]→[Go(post_TestItems)]	Run Posttest Test Items in test program.

7.3.3 Settings Menu



[Settings]→[Reset FailRate] Reset Fail Rate counts to zero and recount the Fail Rate.

[Settings]→[Test Information..] For test information setting. This menu will appear the window of Figure 7-2 for you to input test related conditions.

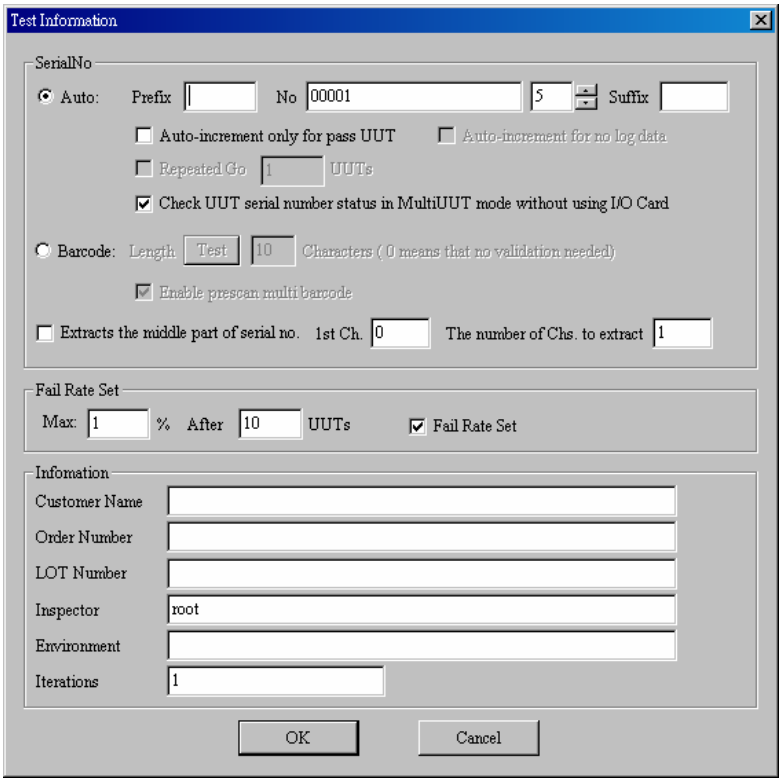


Figure 7-2 Test Program Information Setting Window

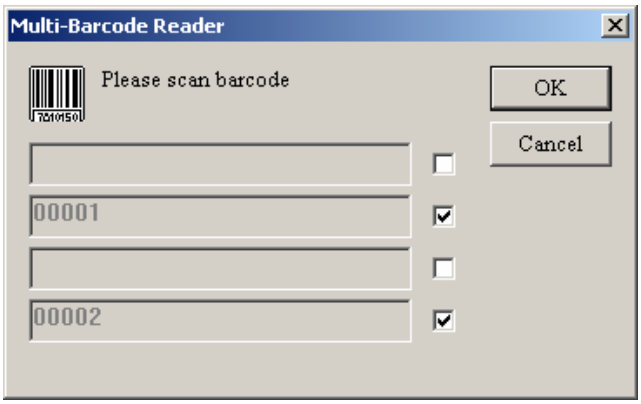


Figure 7-3 Confirming UUT Serial No. in MultiUUT Mode Without Using I/O Card

- Set Serial No.: You can select the UUT serial number to be Auto Count or scanned by Barcode Reader during test. If you use Auto Count to add the serial numbers, you can also set the leading or suffix character and initial number as well as the length for serial number. To check if the UUT is connected in MultiUUT mode without using I/O card, you can select the option and a dialog box will prompt for you to confirm the connection status and serial no. as Figure 7-3 shows. When item 1 and 3 are selected the system will skip them automatically without generating a serial number as they are not connected to UUT. If you use Barcode Reader to scan the serial number, you can define barcode's length for test execution check to prevent from entering wrong serial numbers during test. **Test** button can set the barcode length by calculating it after scanned. If you don't want to check the barcode length during test, you can set it to zero. If the input serial number contains the message you don't want to keep, you can select the option to extract the characters for actual serial number for storage.
- Set Fail Rate
  You need to set Fail Rate limits from 0% to100 %, and the Fail Rate starts to count after how many UUTs are tested.
- Test Related Information

Customer Name	Name of the customer.
Order Number	Purchased order number.
LOT Number	Number of the lot.
Inspector	Name of the inspector.
Environment	The environment temperature at test.
Iterations	UUT retest times.

Notice:

- For different test programs, individual test program information can be set. There is no need to set it again when changes it to different test program.
- Test information is in INI file format and saved to PowerPro installation directory under \INI subdirectory.

[Settings]→[Option..] Open Option setting screen

If users use "OP" or the account without permission to access "Test Program" to log in, a dialog box will prompt to ask for User ID and password when modifying the data of selected option as Figure 7-4 shows. If there is no permission to access the option for modification, it will prompt as Figure 7-5 shows.

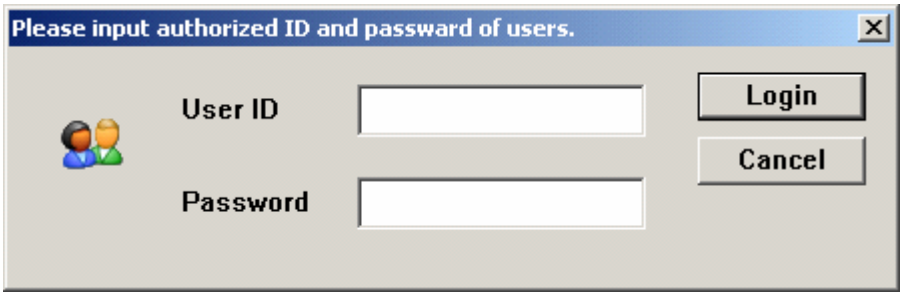


Figure 7-4 Inputting the User ID and Password with "Test Program" Access Permission

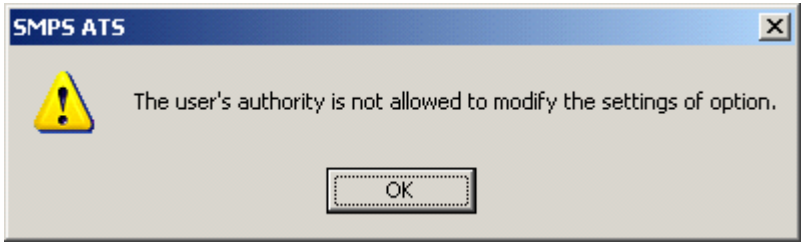
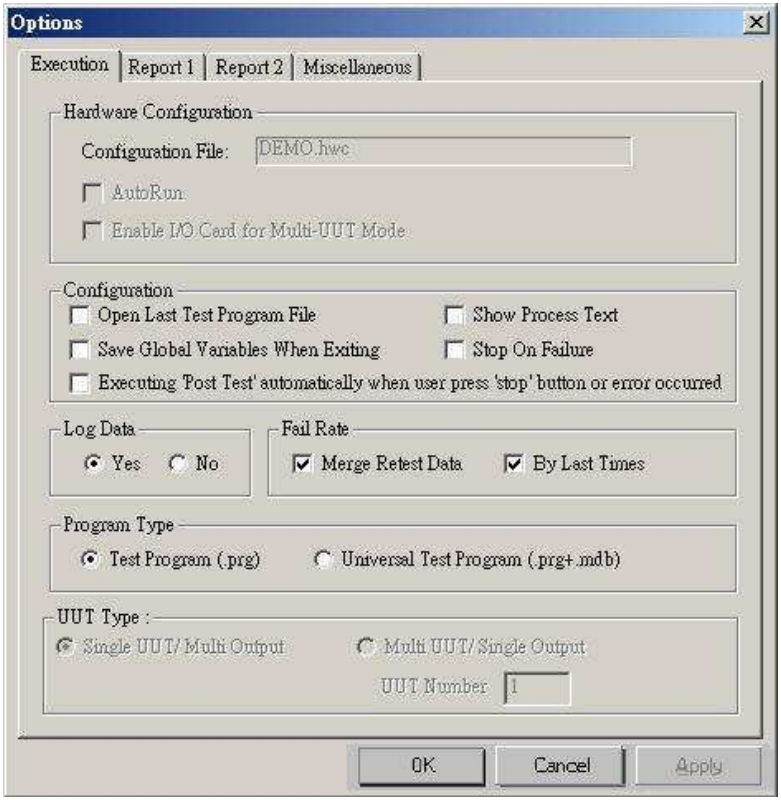


Figure 7-5 Unable to Enter for Modification if No Access Permission

Option setting has four tabs, which are explained beneath.

Execution tab: You can use this tab to set the environment for execution control. The contents in the tab will be logged to the system. After you finished the execution control and reactivate it, all settings on this tab will be loaded automatically from the system.



H/W Configuration:

Configuration File: It sets the hardware configuration file for test.

Auto Run: Select it if run the test program in automatic execution mode through I/O card or Chroma A-B Fixture. It uses the configuration file set at present.

Enable I/O Card for Multi-UUT Mode: Select the feature will output the single UUT test result (Pass/Fail) to the output Bit 9~16 on the first I/O card accordingly. It does not support over 8 UUTs.

Configuration:

Open Last Test Program File: It skips the open file dialog box and open the last executed test program directly. You can use this setting to save your time when opening the same test program again.

Show Process Text: Select this if you want to display more messages in the process display area during execution.

Save Global Variables When Exiting: Select this if you want to save the Global variables set by the test program at exiting, so that they can be loaded when the test program enables next time.

Stop On Failure: Select this if you want to stop testing when a test item fails to meet the spec.

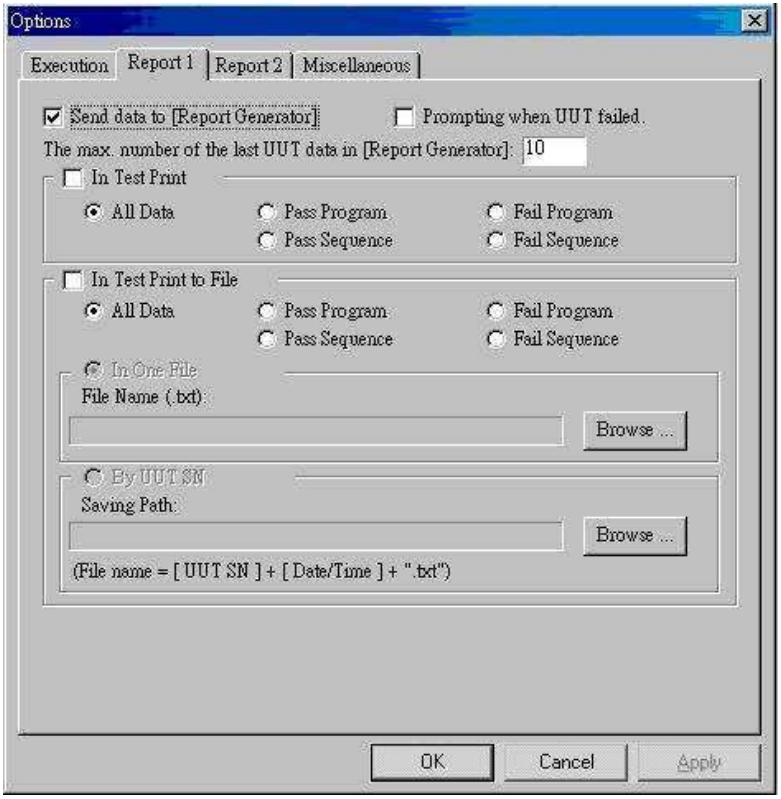
Executing 'Post Test' automatically when user press 'stop' button or error occurred: Select if running Post Test when the test program ends or when the user clicks Stop.

Log Data: You can select if you want to log the test result to database for report and statistics analysis use.

Program Type:

Test Program (.prg): It specifies the file type to be executed to the system's test program.
Universal Test Program (.prg+.mdb): It specifies the file type to be executed to universal test program, see the chapter of *Editing Test Program* for the details of its format.

Report 1 tab: You can use this tab to set the report function provided by the execution environment. All contents will be logged in the system. When you finished the execution control and activate it again, all settings in this tab will be loaded by system automatically.



Report Generator:

Send data to [Report Generator]: If selects, the report generator will enable automatically when executing 'GO'.

Prompting when UUT failed: If selects, the system will prompt a window as shown below to ask you if showing a report for it when the UUT test result is Fail.

The max. number of the last UUT data in [Report Generator]: Enter the maximum number of the last UUT data you want to see in the Report Generator.

In Test Print: If selects, it will enable print function automatically to print the test result after the test program is completed. During the test program execution, if you wish to send the test data to printer through 'Report Generator', you can select 'In Test Print' and follow your needs to set the print condition. Following explains the functions under 'In Test Print':

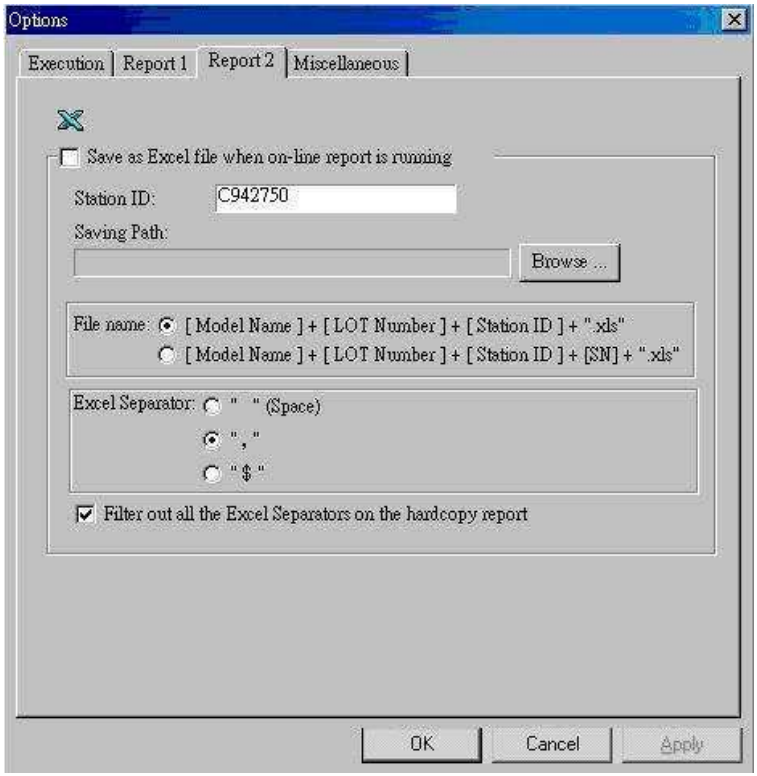
All Data	: Print all test data.
Pass Program	: Print only when the test program result is passed
Fail Program	: Print only when the test program result is failed.
Pass Sequence	: Only print the passed sequence.
Fail Sequence	: Only print the failed sequence.

In Test Print to File: If selects, it will enable print function automatically to print the test result to file and save it after the test program is completed. During the test program execution, you can convert the test data to .txt or .rtf file through 'Report Generator'. To execution this function, you need to select 'In Test Print to File' option and set the condition of the file to be saved. The functions under 'In Test Print to File' are same as those under 'In Test Print' described above.

Please be noted that 'In Test Print' or 'In Test Print to File' can only be selected when 'Send data to [Report Generator]' is selected in advance.

In One File: All test results are saved to same file.
File Name (.txt): It specifies the filename when running 'In Test Print to File'.
By UUT SN: It saves the file according to the combination of UUT serial no. and date. Different UUT is saved to different file.
Saving Path: It specifies the directory for placing the file generated by UUT SN.

Report 2 tab: When **Send data to [Report Generator]** is selected in Report 1 tab, it is able to set if to save the report to Excel file when **Report Generator** is running.



Save as Excel file when on-line report is running: If selects, it will also save the report to Excel file when **Report Generator** is running.

Station ID: It is part of the filename.

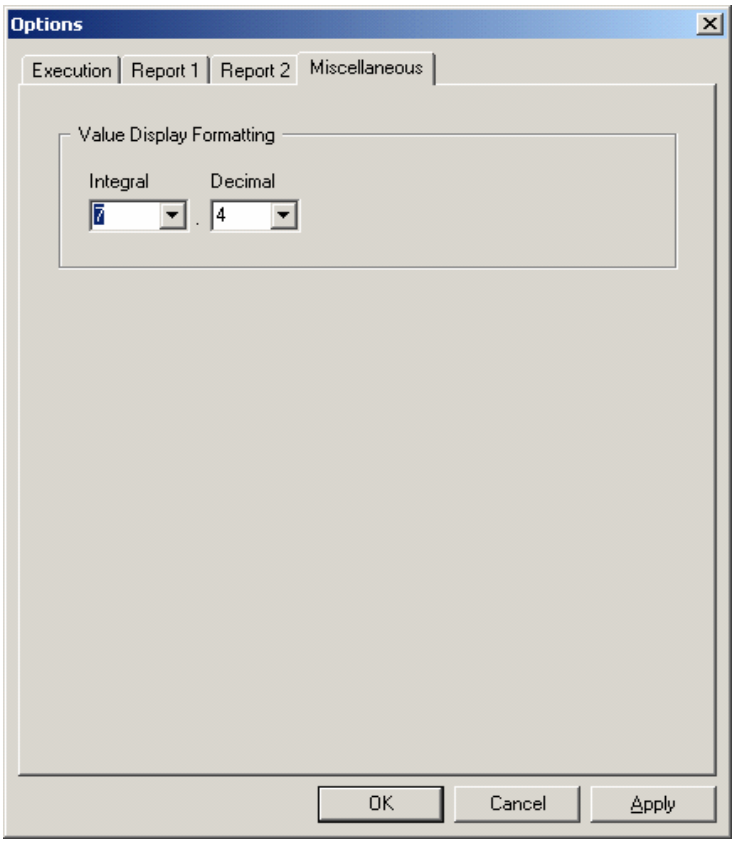
File name: It provides two types of filename settings.

Saving Path: It specifies the path for saving the Excel file.

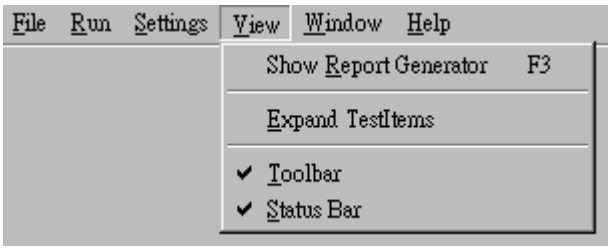
Excel Separator: There are three separators available for selection. The column separator is necessary when outputting a common document to an Excel file.

Filter out all the Excel Separators on the hardcopy report: In order to control the output to Excel report, the separators need to be considered when editing the report format file using **Report Editor**. However, doing that may create a lot of separators in the original report and this option is to filter out the column separators.

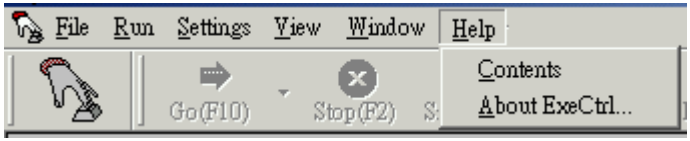
Data Format tab: You can use this tab to set the value display format in the running environment during execution process. If setting the integral to 7, decimal to 4, you will see the value displays 4 digits (discard the rest except the number higher than 5 will be counted) for the decimal in the system at next execution. Please be noted that the data format set only affects the display result. The system still uses the original value for calculation internally.



7.3.4 Other Menus



[View]→[Show Report Generator]	Alternative key, F3. Call report generator.
[View]→[Expand TestItems]	Select the test program if you want to expand the test items in test program display area.
[View]→[Toolbar]	Select it if you want to display the execution control toolbar.
[View]→[Status Bar]	Select it if you want to display the status bar.



[Help]→[Contents]	Display the table of contents for the online documentation.
[Help]→[About ExeCtrl]	Display the version information of this program.

7.4 AutoRun Function

GO/NOGO can be operated manually by operator for testing; in addition it supports the control function for automatic test. Its action is to invoke the test program execution via I/O Card input signal and output the test result to I/O Card output signal. The I/O Card usage is not exclusive for GO/NOGO; users can call the I/O Card test commands directly to drive all of the I/O Card signals. Thus, you need to avoid those I/O signal bits when designing the Test Program.

7.4.1 Set I/O Card

First, add a new I/O Card device in 'H/W Configuration' as Figure 7-6 shows below.

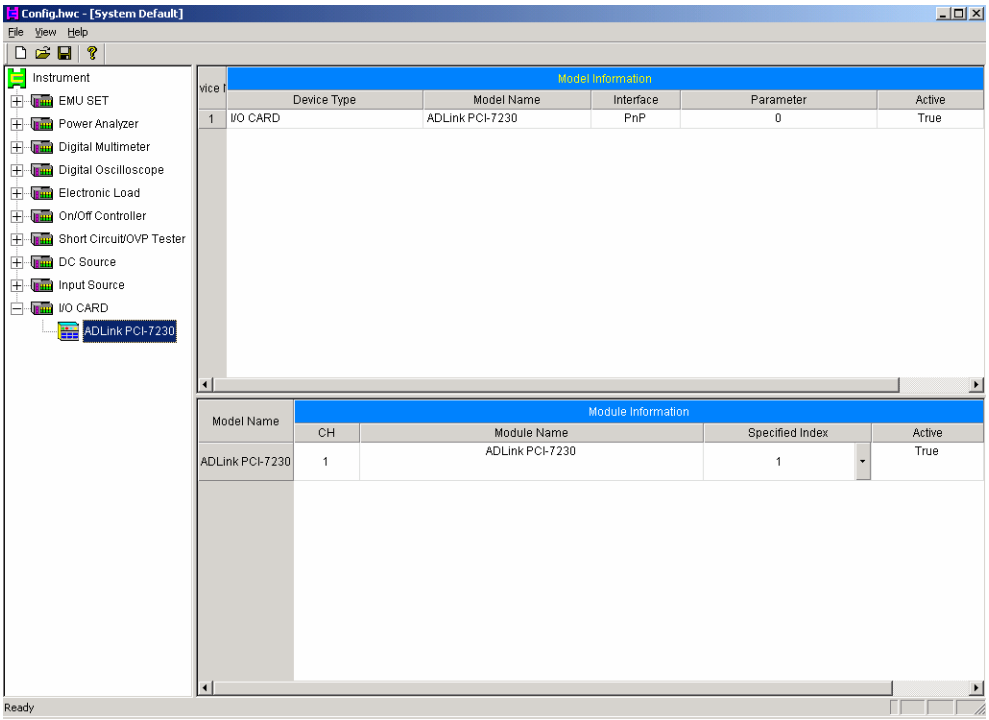


Figure 7-6 Add an I/O Card

Then, click **[Settings]→[Option..]** in 'GO/NOGO' to select AutoRun function. 'GO/NOGO' always uses the first card as the object for automatic control. However, if I/O card is not set in 'H/W Configuration' or not initialized successfully, AutoRun option will be grayed out and is not available for selection.

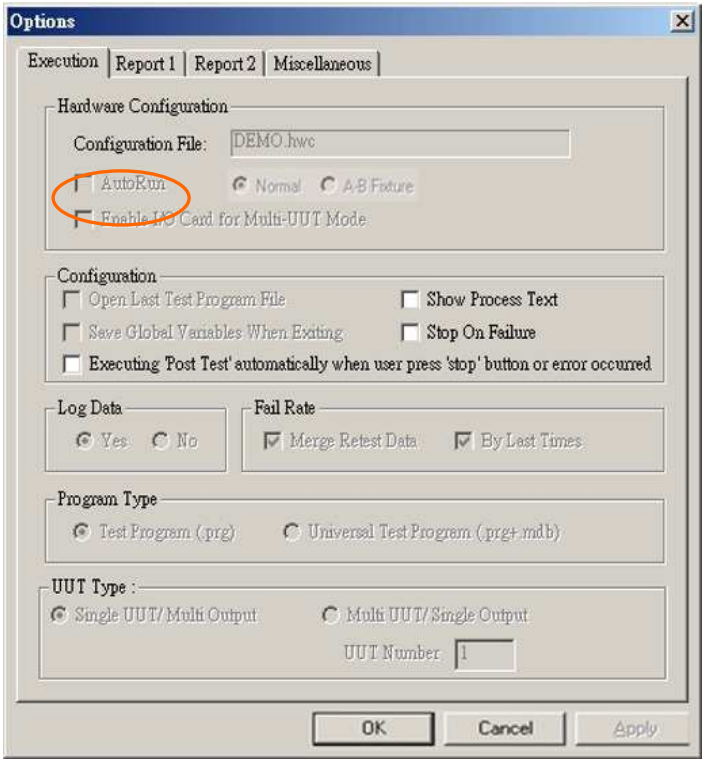
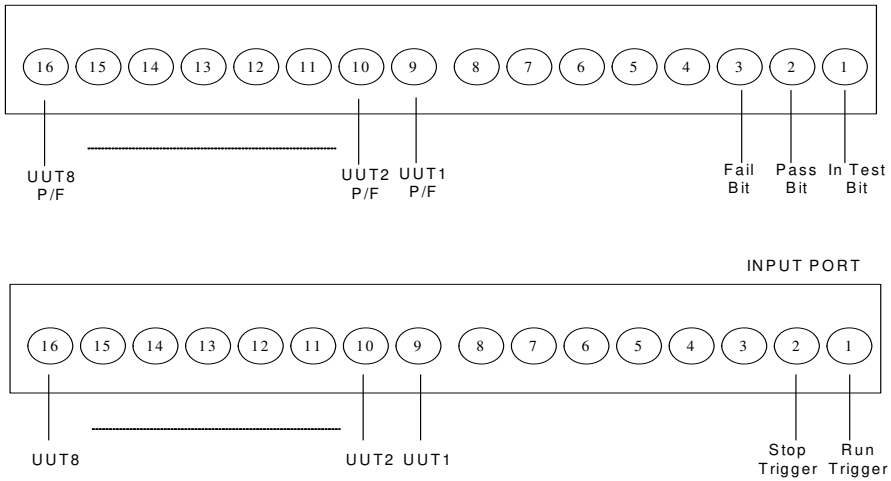


Figure 7-7 AutoRun Function

The input port Bit 1,2 and output port Bit 1,2,3 on the first card set in 'H/W Configuration' are reserved for 'GO/NOGO' process control as the figure defined below.



Note: If the **Enable I/O Card for Multi-UUT Mode** is checked in Execution tab, the input port Bit 9~16 are reserved for UUT 1~UUT 8 for detecting the signal if UUT is connected, while the output port Bit 9 ~ 16 are reserved for UUT1 ~ UUT8 to display the test result.

It will generate the output signal as shown in the above figure and two input signal to control the test progress during test.

Output signal: In Test Bit, Pass Bit, Fail Bit.
Input signal: Run Trigger, Stop Trigger.

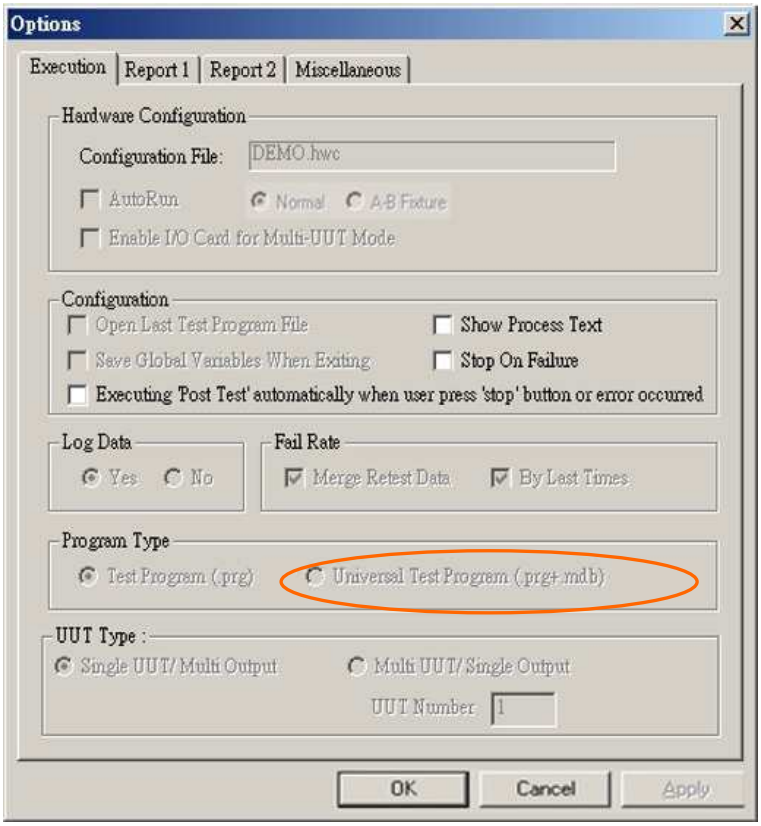
The test signal actions are described as below:

(1) First check the Run Trigger input signal before the test starts. The test starts if it is in TTL HIGH Level; otherwise the test will not start until this signal turns HIGH. (Once the test starts, this signal is ignored until the UUT is done. You need to wait for this signal to turn HIGH for testing the next UUT.
(2) Once the test started, setting In Test Bit = TTL HIGH, Pass Bit = TTL LOW, and Fail Bit = TTL LOW means the test is in process.
(3) After the test started, the test will stop if the Stop Trigger input signal is in TTL HIGH Level.
(4) When the test finishes, setting In Test Bit = TTL LOW means the test is done and follows the test result that is PASS or FAIL to set Pass Bit or Fail Bit to TTL HIGH.
(5) Return to (1) and restart.

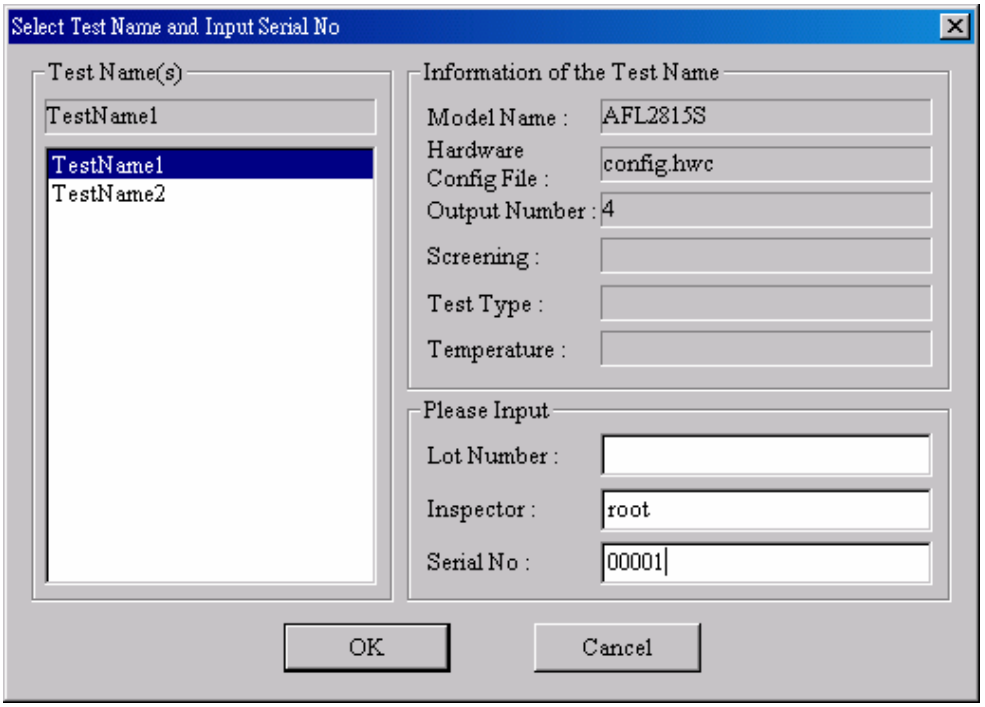
You can use these signals to control the start of the test. Also you can utilize the PASS/FAIL result for different management.

7.5 Executing Universal Test Program

To execute the Universal Test Program, first set the Program Type to **Universal Test Program (.prg+.mdb)** in the Execution tab of **Options** dialog box as shown below:



When the dialog box of editing test program is opened again, the Universal Test Program is ready. Select the desired Universal Test Program and click GO or press the function key F10 will prompt the dialog box of **Select Test Name and Input Serial No** as follows:



The Universal Test Program is mainly applicable for testing series models. Customers can create different test conditions and specifications for various models in Access 2000. Each of the Test Name in the List Box of the dialog box maps to a Model, and the Model related info is display at right. First select a Test Name and key in the Serial No, then click **OK** to execute it.

8. Editing Report Format

8.1 Run Program

In SMPS ATS software main menu, click [Report Editor] in the Basic group to run report editor. The program will ask you to select the report format file you want to edit beforehand. You can select the file and click **OK** to start editing or click **Cancel** to let the program open a report format file for you.

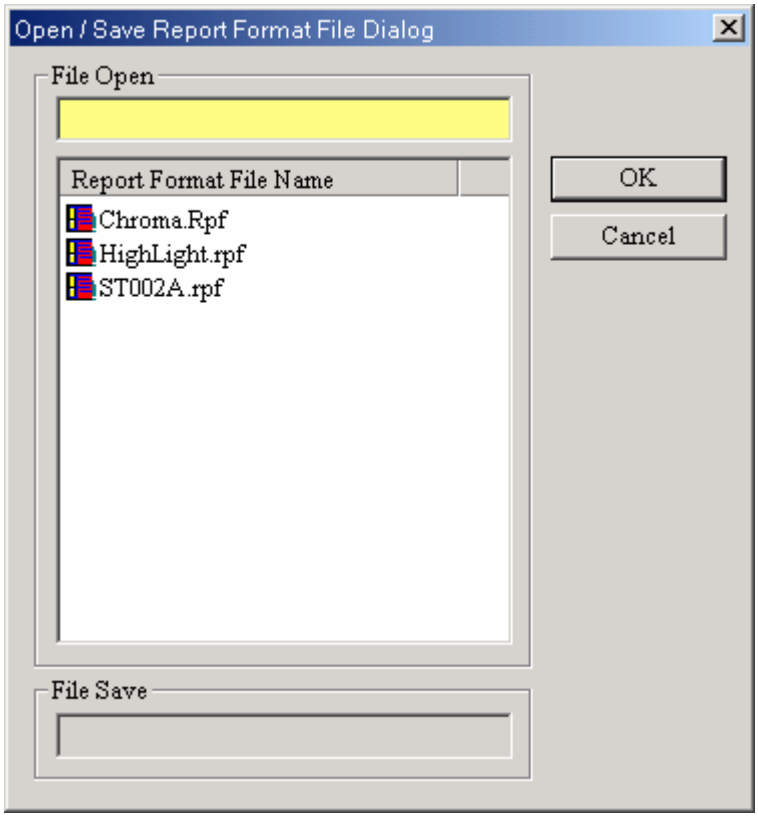


Figure 8-1 Open Report Format File Window

After selecting the file, the screen will appear Report Editor main menu as Figure 8-2 shows.

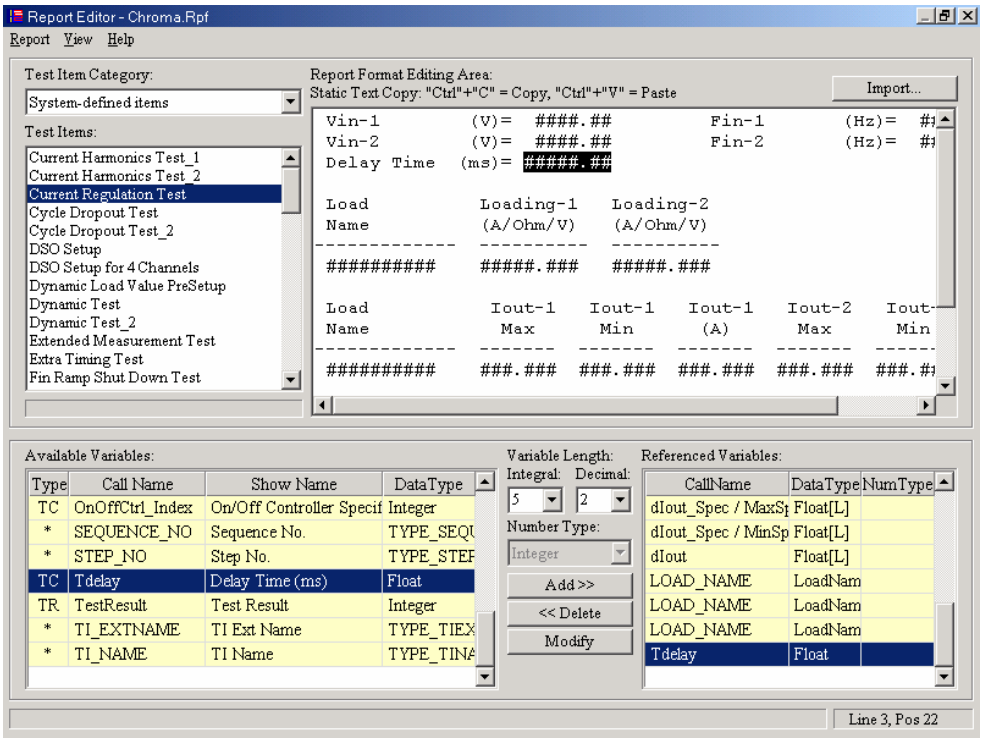
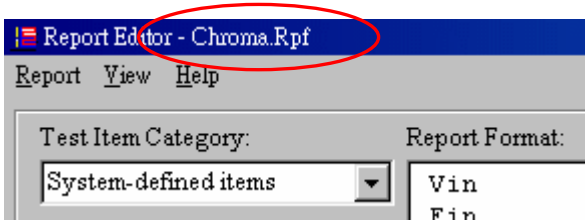


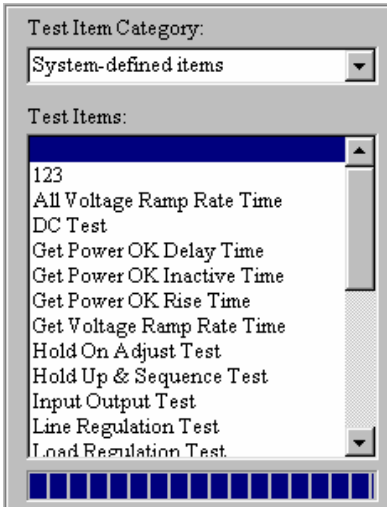
Figure 8-2 Report Format Editing Screen

8.2 Environment Description

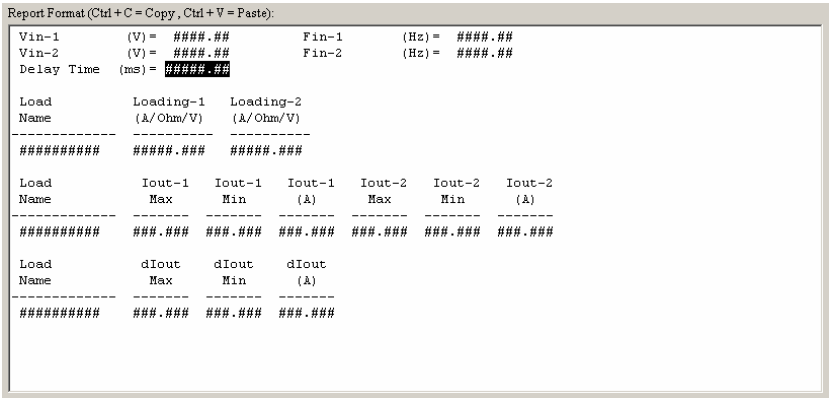
- The Caption on the main menu shows the string "Report Editor – " with the edited report format filename ("Chroma" in the example). If you click **Cancel** when selecting the report format file, it will be named "Untitled". Please use **[Report]→[Save As]** to save it to the filename you want after completing the editing.



- Test Item Category and Test Items are two drop-down menus on the main menu upper-left part. The Test Item Category drop-down menu can let you select the types of "System-defined items" and " User-defined items". The Test Items drop-down menu below allows you to select the test item you want to edit the report format for. In addition, there is a Progress Bar under the drop-down menu to show the progress of reading the current report format of the test item.



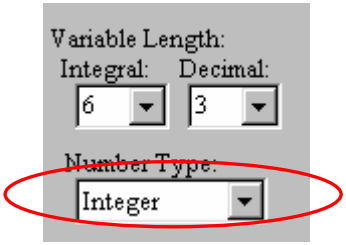
- The right portion of the main window is report format editing area. You can edit the report output format you need in this editing area. This means every test item's report output format is displayed and edited separately. The report format in editing will update immediately when you select different test item. All of the characters can be used in the editing area except "**#**". This is because we use "#" character to form a **Pattern** for variable such as "###.##". This variable Pattern has 3 integral and 2 decimal, and its length is 6-character long. Please do not use over 80 ascii characters in a text line in the editing area to avoid any data lost at printing.



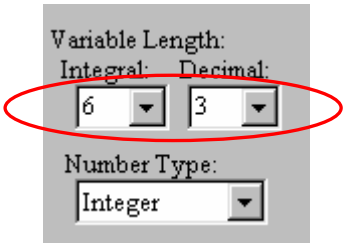
- The Available Variables window is located at the lower left area that lists the available variables for the current Test Item. The displayed information contains **Type**, **Call Name, Show Name** and **Data Type**. There are three variable types: **TC** (Test Condition), **TR** (Test Result) and **GR** (Global Variable). For Data Types, they are Integer, Float, Percent, Long, String, Char, Integer [L], Float [L], Percent [L], Float [ ], Integer [ ] and Vector Type.

- If the variable's Data Type is Integer [L], Float [L] or Percent [L], this means it is a Load related variable. The program will follow the current format and the load number to expand automatically when generates the report.

- If the variable's Data Type is Integer, Integer [L] or Integer [ ], you can set its display type to Integer, Binary and Hexadecimal when generates report.

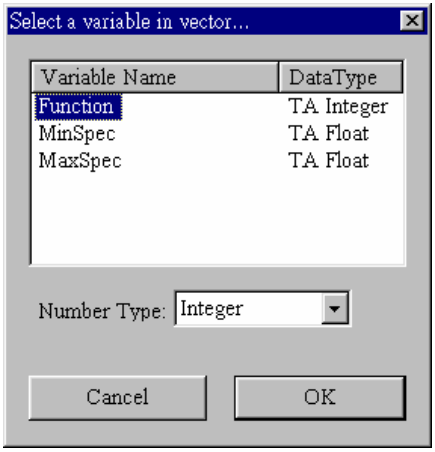


- The three drop-down menus on the lower main window set the variable length, and the format including the number for **Integral** and **Decimal**. This information will be referred to form a Pattern variable when you add a variable to the editing area. For example, the format 6.3 variable in the figure below will form the Pattern to become **######.###**, and its length is 10.



- Referenced Variables window at the window lower right lists the variables you selected for report format. The variable information displayed contains **Call Name**, **Data Type and Number Type.**

- If the Data Type of the variable you selected is Vector, the program will display a window for you to choose the variable as the figure shows below. Similarly, if you choose the variable Data Type as Integer, Integer [L] or Integer [], you can set its display type when generates report. Meanwhile, the Referenced Variables window displays the variable Call Name to be " Vector Name / Variable Name".

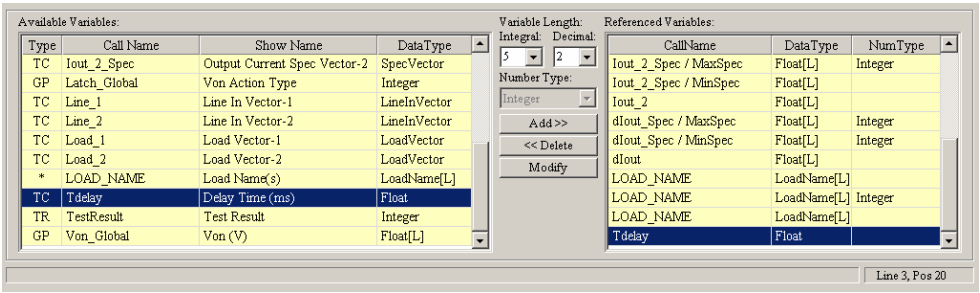


8.3 Operating Instruction

8.3.1 Adding Variable to Editing Area

Select the test item you want to edit in the Test Item window before adding variables to editing area. Then click a variable in the Available Variables window for variable length

setting. If Number Type can be set, you can also set its display type. Click **Add >>** button to add the variable at the pointer position where is between Referenced Variables window and editing area in the upper main window. (Variable in editing area is in Pattern format.)



8.3.2 Deleting Variable from Editing Area

If you only want to delete one variable, we suggest you to click the variable to delete in the Referenced Variables window, then click **<< Delete** button. The variable will be removed from the Referenced Variables window; in the mean time the mapped Pattern in editing area will be removed too.

8.3.3 Checking the Variable in Editing Area

The variable in editing area is displayed in Pattern format. If you want to know this variable's information, you can click the Pattern and its information will be reversed in Referenced Variables window and Available Variables window as Figure 8-2 shows.

You can also drag the variables in the Referenced Variables window, the variable pattern in the editing area will be reversed and the Available Variables window will appear the information of current variable.

8.3.4 Setting Font and Color for Editing Area

You can use **[View]→[Set Color]** menu to set the text color in editing area. In the window below, click the color area to display the color palette for selection. You can save the current setting as default by clicking **Set Default** button. And you can click the button **Use Default** to retrieve the default color saved before.

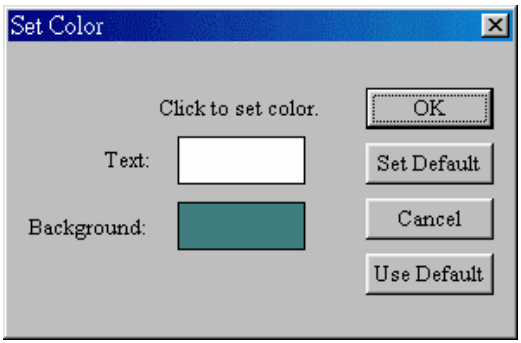


Figure 8-3 Set the Font Color in Editing Area

You can use **[View]→[Set Font]** menu to set the text font used in editing area. From the following window you can select font, style and size. We suggest you to use the font that every character is in the same size such as Courier New so that the report will display with alignment.

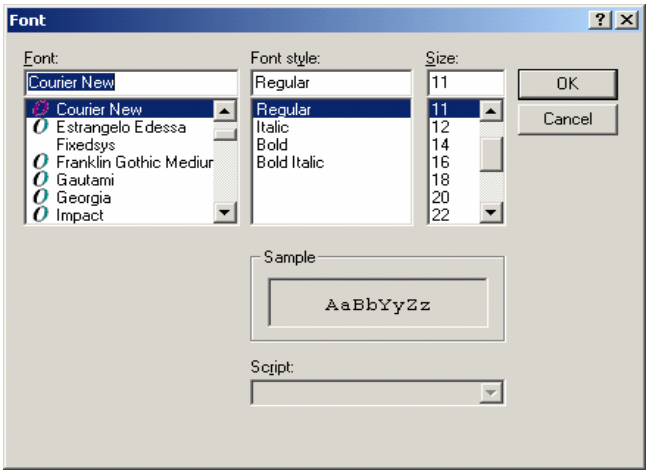


Figure 8-4 Set the Font in Editing Area

8.3.5 Hint Window

In the Available Variables window, point to a variable and click, it will prompt a Hint Window. Hint Window has further information than Available Variables window as the figure shown below. You can use **[View]→[Show Hint Window]** menu to select whether to display the Hint Window or not.

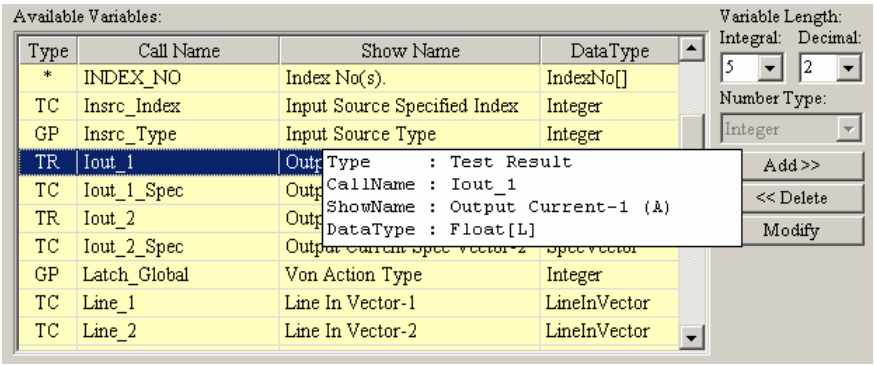


Figure 8-5 The Hint Window

8.3.6 Setting Character Set

Click **[View]→[Set Char Set]** to set the character set used by the program.

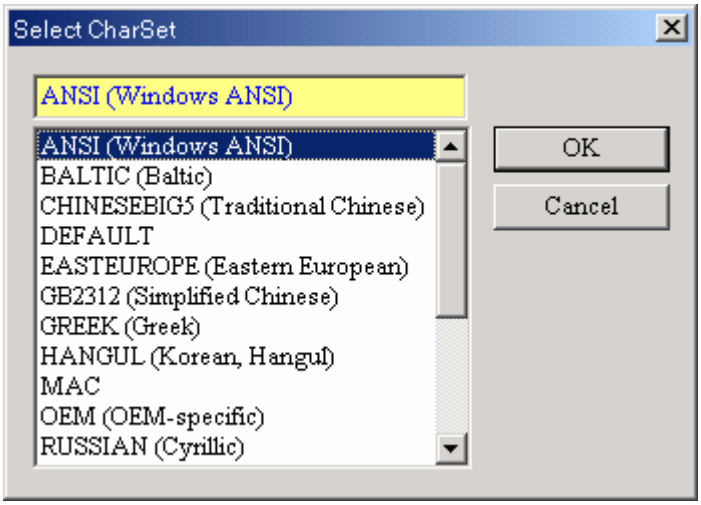
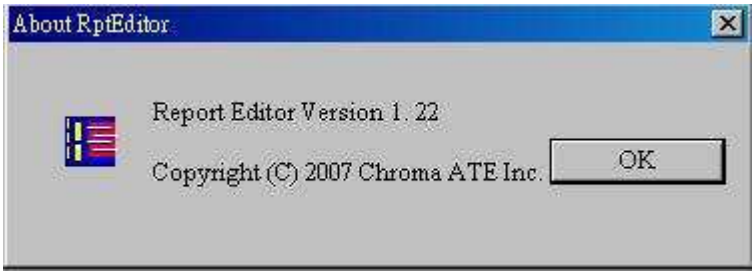


Figure 8-6 Setting the Character Set

8.3.7 About Report Editor

Click **[Help]→[About]** to get the version information of this program.



8.3.8 Menu Description

[Report]→[New]	Add a new report output format file.
[Report]→[Open]	Open an existing report format file (*.Rpf).
[Report]→[Save]	Save the report output format edited. If you are editing a new report format (with Untitled filename), the dialog box 'Save as…' will appear for you to specify the filename you want to save as.
[Report]→[Save As]	Save the edited file to another filename.
[Report]→[Exit]	End the program and return to SMPS ATS software main menu.
[View]→[Set Editing Area Color]	Set the text color in editing area.
[View]→[Set Font]	Set the text font in editing area.
[View]→[Set CharSet]	Set the character set currently used.
[View]→[Show Hint Window]	Set if you want to show the Hint Window.
[Help]→[Contents]	Display the table of contents for the online documentation.
[Help]→[About]	Display the version information of this program.

9. Report Generator

9.1 Program Execution

There are two ways to execute report generator. In Off-line mode, select **Report Generator** from the Basic group in SMPS ATS software main menu to run the program, and it will display the 'Select data of tested UUTs from database' window. Or, in On-line mode, the report generator is called automatically by 'Execution Control' program during test and receives the test result from it.

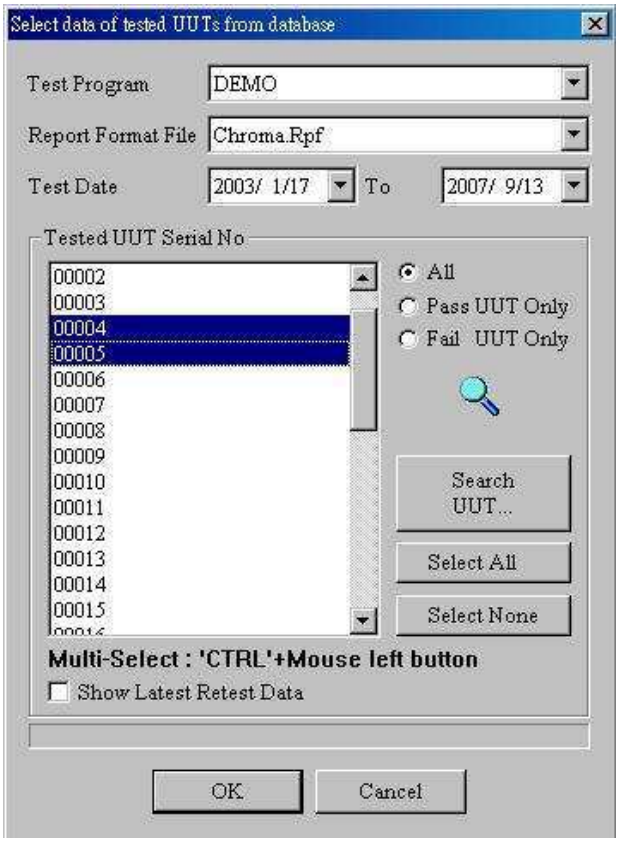


Figure 9-1 Window for Selecting the Data to be Printed

The Report Generator main window appears after you selected the data for print in Off-line mode. The program will follow the Test Program, Test Date and UUT Serial No. you selected with the Test Item Report Format File to generate the final report.

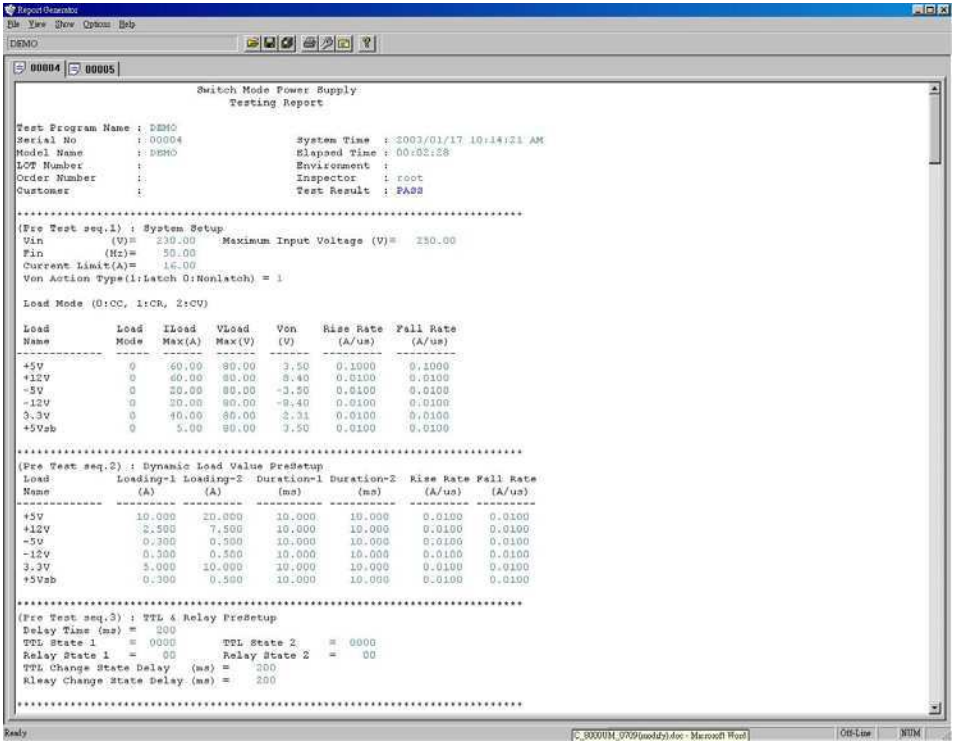


Figure 9-2 Report Generator Main Window

9.2 Environment

The program main window has an editing window (also called data display area) that is used to display the final result from report generator. It is read-only. As the data display area can only show one UUT report, we can use Tab to separate each UUT report as Figure 9-3 shows.

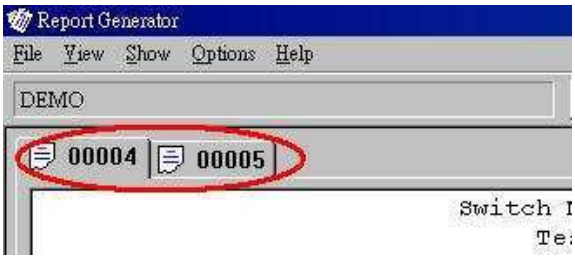


Figure 9-3 A Tab Page in Data Display Area

Tabs quantity equals to the UUT serial numbers selected in 'Select data of tested UUTs from database' window, which means a Tab per UUT. The tab title is the UUT serial number. To view a certain UUT report, you can click the serial number tab, and the program will automatically generate the report and display it on the data display area.

The Indicator on the main window Status Bar shows the mode, Off-line or On-line, where the current program is in. As it needs time to generate a report, the Progress Bar on Status Bar will activate to show you the progress when it switches to different tab for another report.

Figure 9-4 Status Bar in Main Window

9.3 Operation

'Execution Control' automatically saves the UUT test result and data to database during testing in On-line mode so that you can generate the report Off-line at any time. The program cannot generate reports if there is no previous test data as it uses the figures resulted from the test process in Off-line mode.

9.3.1 'Select data of tested UUTs from database' Window

When running the program Off-line, the 'Select data of tested UUTs from database' window appears to let you select the report you wish to generate. You can also click **[File]→[Open Log Database]** to open this window. Following are the operations steps.

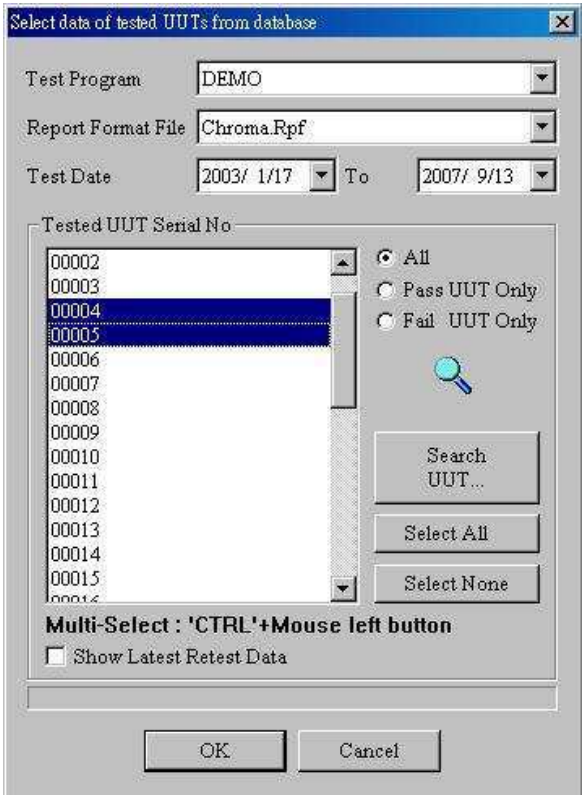


Figure 9-5 Selecting the Data to be Printed

1. Use the Test Program's drop-down menu on the window to select the test program for opening. The program will follow your selection to update the window contents for Report Format File and Test Date.

2. Latter you can use the Test Date drop-down menu to select the test date and select **All**, **Pass UUT Only** or **Fail UUT Only** and than click **Search UUT…** to filter out the desired UUT. The Tested UUT Serial No window will show the S/N of tested UUT in that date. In addition you can also use Report Format File drop-down menu to select the matching report format.

3. When selecting Serial No, you can use **Select All** or **Select None** button to select all of them or cancel the selection. You can drag selections to select multiple UUTs continuously. To select multiple UUTs discontinuously, you can hold down the **Ctrl** key and then click the UUT serial numbers.

4. If you wish to know the sequence of a UUT, select a UUT serial no. and then click **[Show] →[Sequences…]** to prompt a window as Figure 9-6 shows. The Sequences of the UUT list box will show the sequence of the UUT.

5. After completed the setting, click **OK** button to let the program generate the report for you.

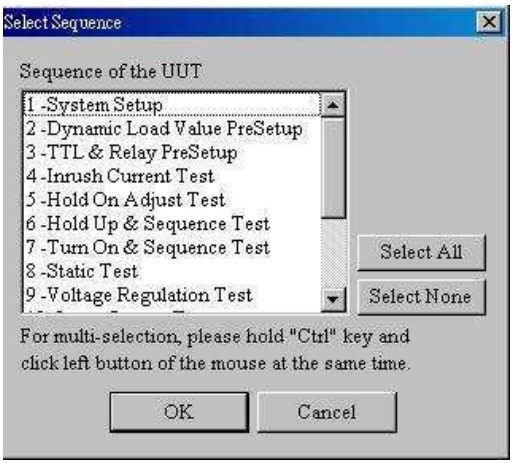
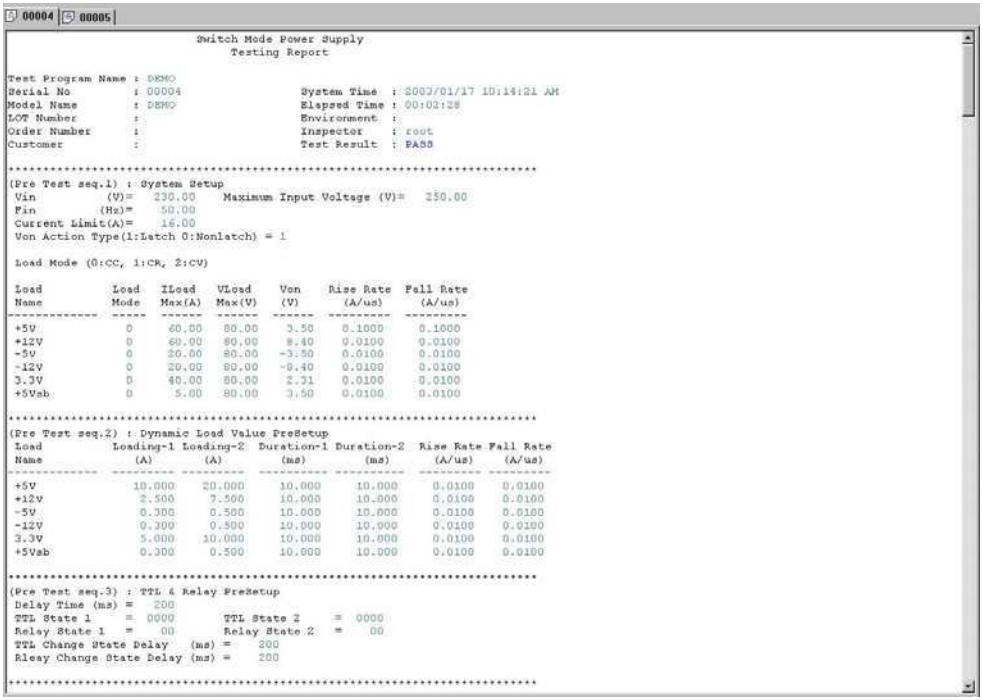


Figure 9-6 Select Sequence Window

9.3.2 Data Display Area

Data display area contains two parts, Header Information and report contents of test item sequences. Every UUT has a piece of Header Information while the numbers of test items are defined by the test program contents.



00004 | 00005

Switch Mode Power Supply
Testing Report

Test Program Name : DEMO
Serial No : 00004 System Time : 2003/01/17 10:14:21 AM
Model Name : DEMO Elapsed Time : 00:03:28
LOT Number : Environment :
Order Number : Inspector : root
Customer : Test Result : PASS

(Pre Test seq.1) : System Setup
Vin (V)= 230.00 Maximum Input Voltage (V)= 250.00
Fin (Hz)= 50.00
Current Limit(A)= 16.00
Von Action Type(1:Latch 0:Nonlatch) = 1

Load Mode (0:CC, 1:CR, 2:CV)

Load Name	Load Mode	ILoad Max(A)	VLoad Max(V)	Von (V)	Rise Rate (A/us)	Fall Rate (A/us)
+5V	0	60.00	80.00	3.50	0.1000	0.1000
+12V	0	60.00	80.00	8.40	0.0100	0.0100
-5V	0	20.00	80.00	-3.50	0.0100	0.0100
-12V	0	20.00	80.00	-8.40	0.0100	0.0100
3.3V	0	40.00	80.00	2.31	0.0100	0.0100
+5Vsb	0	5.00	80.00	3.50	0.0100	0.0100

(Pre Test seq.2) : Dynamic Load Value PreSetup

Load Name	Loading-1 (A)	Loading-2 (A)	Duration-1 (ms)	Duration-2 (ms)	Rise Rate (A/us)	Fall Rate (A/us)
+5V	10.000	20.000	10.000	10.000	0.0100	0.0100
+12V	2.500	7.500	10.000	10.000	0.0100	0.0100
-5V	0.300	0.500	10.000	10.000	0.0100	0.0100
-12V	0.300	0.500	10.000	10.000	0.0100	0.0100
3.3V	5.000	10.000	10.000	10.000	0.0100	0.0100
+5Vsb	0.300	0.500	10.000	10.000	0.0100	0.0100

(Pre Test seq.3) : TTL & Relay PreSetup
Delay Time (ms) = 200
TTL State 1 = 0000 TTL State 2 = 0000
Relay State 1 = 00 Relay State 2 = 00
TTL Change State Delay (ms) = 200
Rleay Change State Delay (ms) = 200

Figure 9-7 The Data Display Area

ⓘ Note

For the test item contents, users can use the **Report Editor** program in main menu for editing. The readings can be retrieved from **GO/NOGO** test program. Detail information please see Chapter 7 and 8 in this manual.

9.3.3 Selecting/Switching UUT Report

Click the UUT Serial No. tab, the program will automatically generate the UUT report and display it on the display data area.

9.3.4 Header Information

Header Information contains Test Program Name, Serial No., Model Name, Lot Number, Order Number, Inspector, Environment, Customer, Elapsed Time, Test Result and System Time. You can click **[Show] →[Header]** to set if displaying the header information. The

format of header information can be edited by the **Report Editor** program in the main menu, and the changed result will be saved in the report format file.

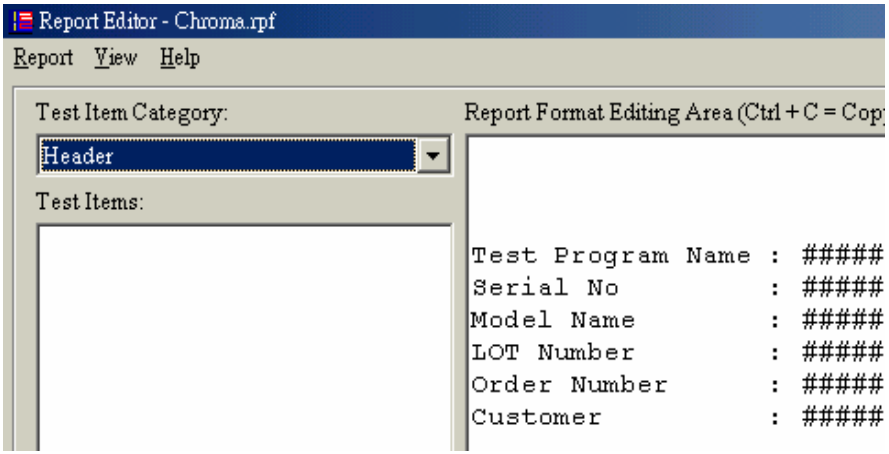


Figure 9-8 The Header Info of UUT

9.3.5 Setting Color for Editing Area

You can use **[View]→[Set Color]** to set the color of editing area as the window shows in Figure 9-9. Click the color area will show up a color window for you to select. To save the selected color as default in Figure 9-9, click **Save As Default** button. You can use **Load Default** at anytime to retrieve the default color set previously.

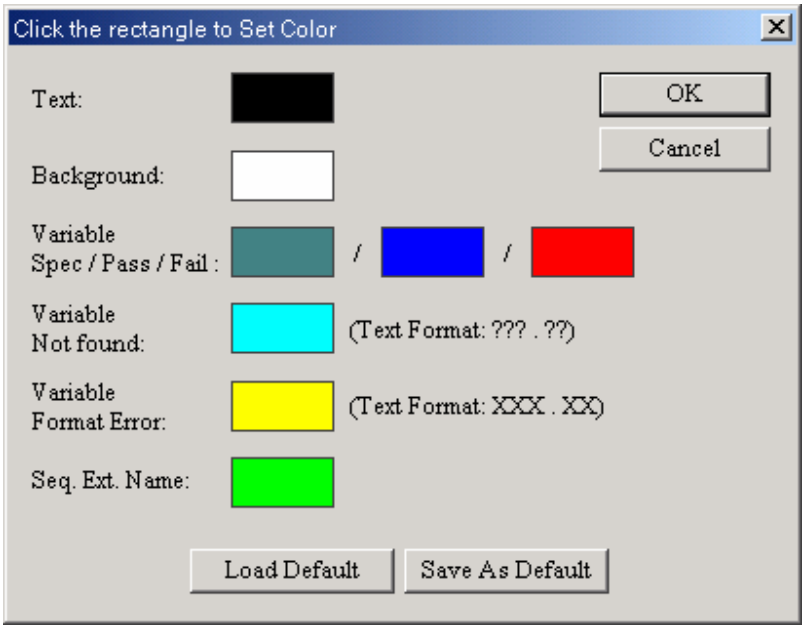


Figure 9-9 Setting the Text Color in Editing Area

Description:

Text	Color for general text
Background	Color for background color.
Variable / Spec	Color for settings.
Variable / Pass	Color for pass reading.
Variable / Fail	Color for fail reading.
Variable Not Found	Cannot find the variable, replace it with "?".
Variable Format Error	The digit number in variable format is not enough. Unable to display the correct value and replaced it with "X".
Seq. Ext. Name	The first line on each test item's report that contains Seq. No, Seq. Name, Seq. Ext. Name, Elapsed Time and etc. The Seq. Ext. Name is able to specify different color.

9.3.6 Setting Font for Editing Area

You can use **[View]→[Set Font]** to set the font for data display area as the window shows in Figure 9-10. You can select the font, typeface and size, or use **[View]→[Reset Font (Report Format File)]** to return to the program default font.

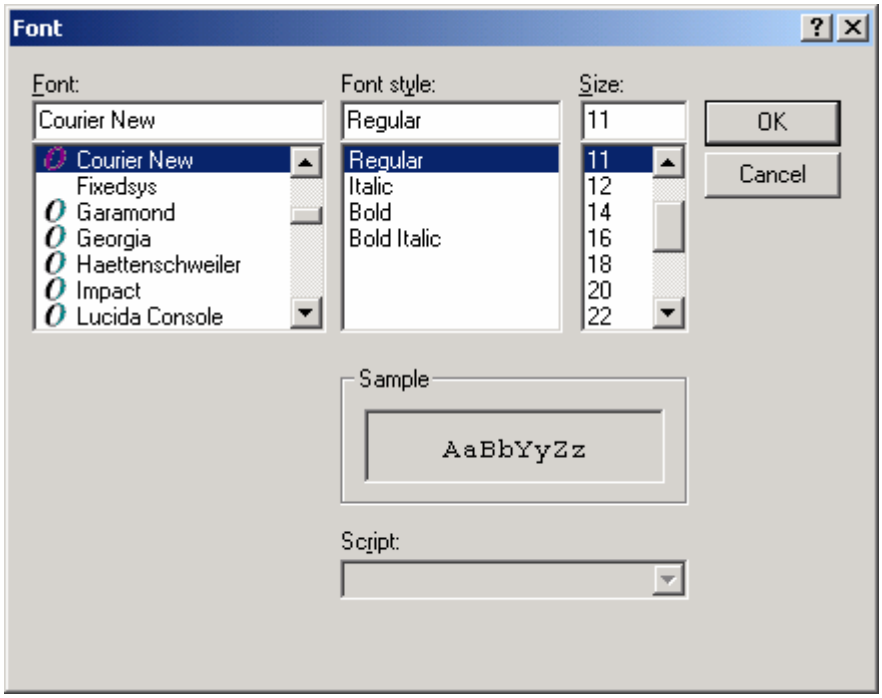


Figure 9-10 Setting the Font in Data Display Area

ⓘ Note
The program default font is Courier New, standard typeface and size 11.

9.3.7 Displaying /Printing Test Item

You can use **[Show]→[Sequences]** to select displaying partial test sequences in the report. The 'Selected Sequence' window appears as Figure 9-11 shows.

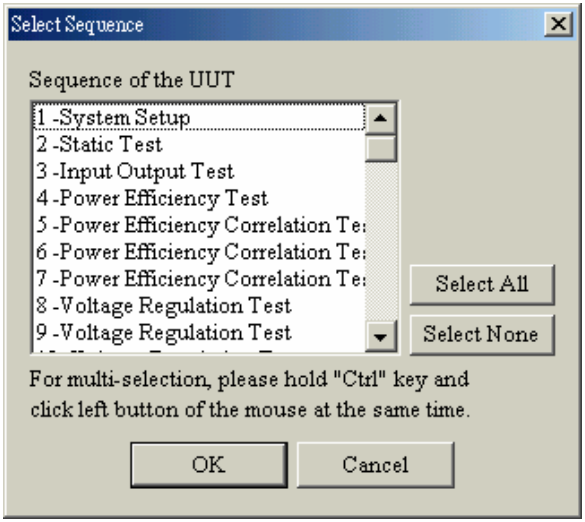


Figure 9-11 Selecting Test Sequence

You can use **Select All** or **Select None** button to select all of the selections or cancel them. To select multiple test sequences continuously, you can drag the selections. For selecting multiple test sequences discontinuously, you can hold down the **Ctrl** key and click the UUT sequence desired.

To display all test sequences, you can use **[Show]→[All Sequences]** to do it. As for printing partial report, please select the test sequences and click **[File]→[Print]** to print.

9.3.8 'Print Preview' Function

You can click **[File]→[Print Preview]** to enter the print preview mode. Print preview displays the print simulation of data display area on screen.

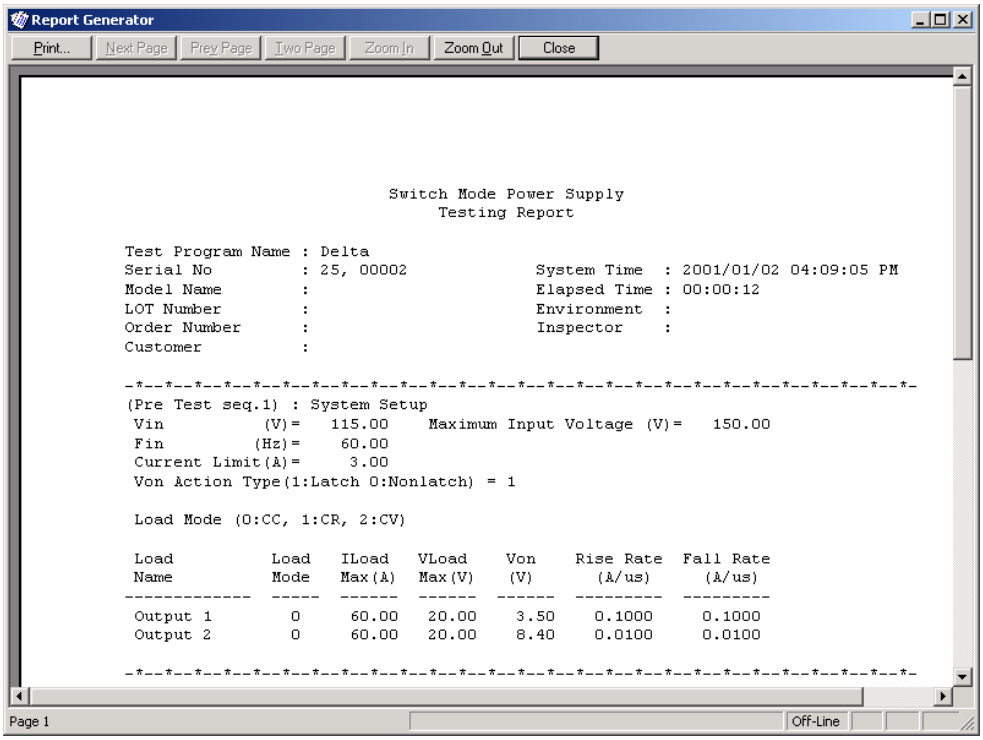


Figure 9-12 Print Preview

ⓘ Note

Print Preview and Print use Courier New font. It cannot be set by data display font setting.

9.3.9 Printing

To print the contents in data display area without preview, you can click **[File]→[Print]** to do it. It will appear 'Print' window to let you select printer, print range and copies. You can click **OK** to confirm the printing.

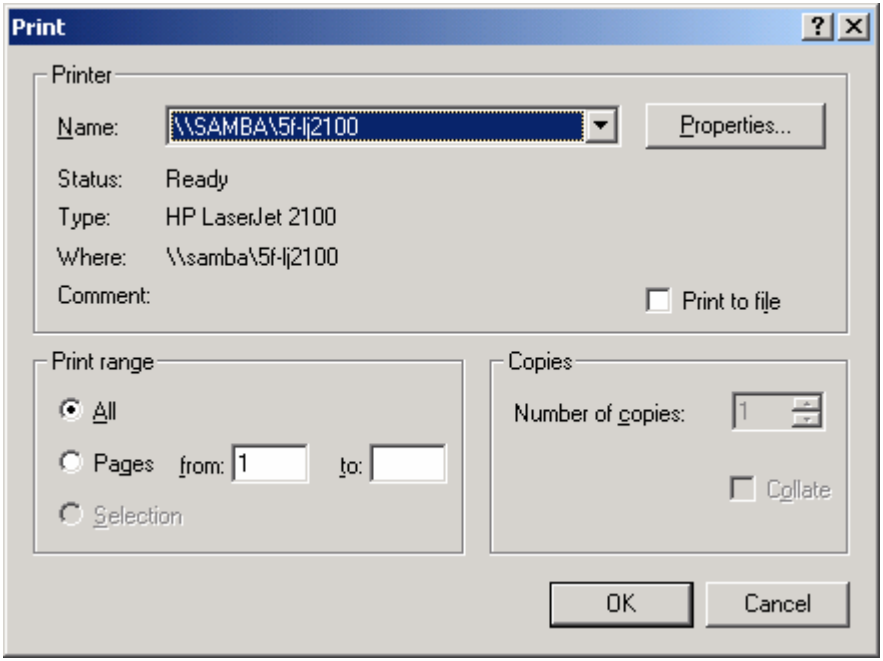


Figure 9-13 Print Window

9.3.10 'Save/Save All' Function

You can use **[File]→[Save Current Tab]** to save the current report as text (TXT) file that can be opened by text editor, or as Rich Editor Format Files (RTF) that can be opened by Microsoft Word and WordPad. The difference is RTF file can save the format information including font, color and size.

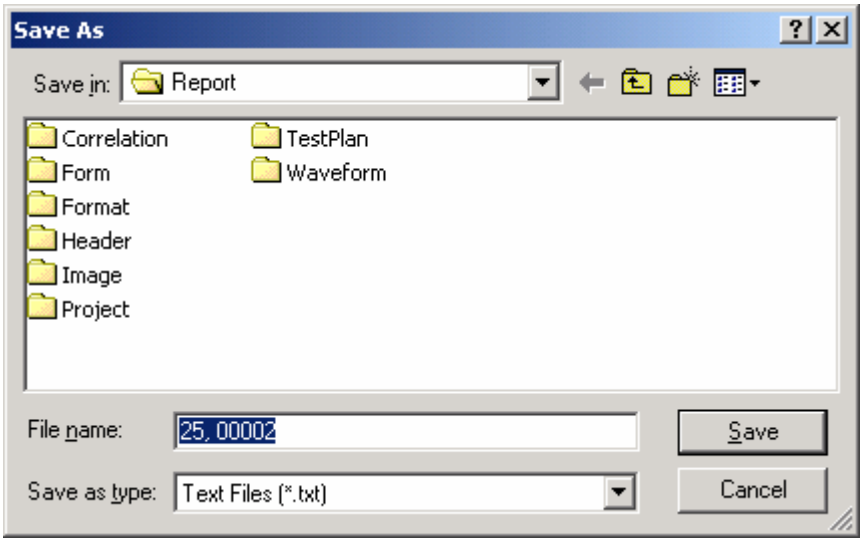


Figure 9-14 Save As Window

You can click **[File]→[Save All]** to save all UUT reports. The program will ask you for the filename that you want to save to one by one. You can give it a new name or use the program default, which is UUT's Serial No.

9.3.11 Print Option

You can click **[File]→[Print Option]** to set the print options including page break, header and page number display.

When page break is selected, the program will check the remaining lines on each page automatically to see if there is enough space for printing another test item report. It avoids separating one test item report into two pages as possible. Header is the text to be added on top of the page during printing. This program limits 3 lines maximum for the header.

When page number is selected, the program will add a page number in the middle at the bottom of the page during printing, for example, "P 1/20" indicates there are total 20 pages and this is page 1.

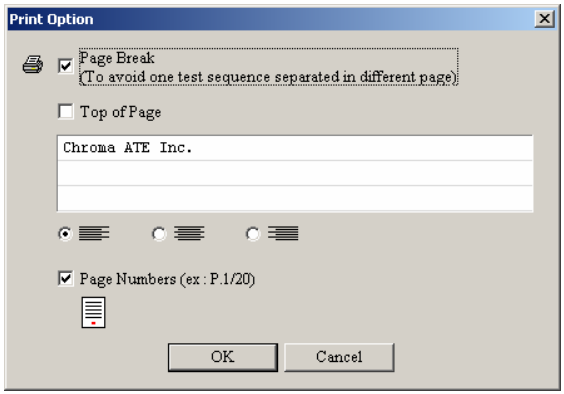


Figure 9-15 Print Option

9.3.12 Mail Option

The SMPS ATS system software can mail the report generated by Report Generator as an attachment to a specified e-mail box via the 'MailGen' program. You can click **[File]→ [Mail Option]** to set when to send the mail and the recipient e-mail address. There are 3 tabs for this dialog box. Here explains the contents of first tab.

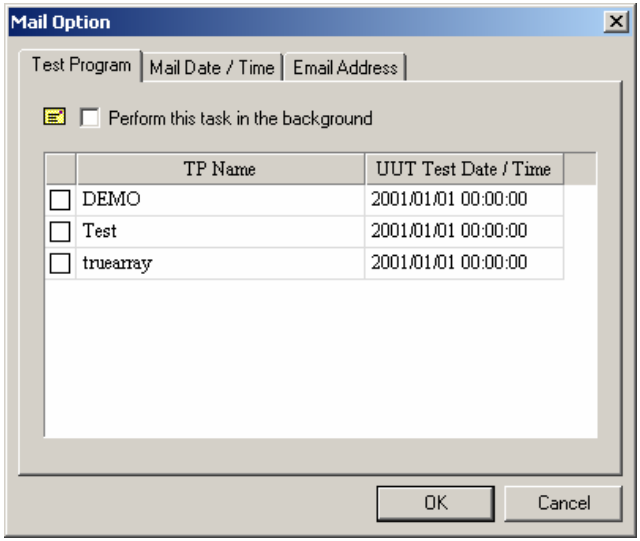


Figure 9-16 MailGen

The selections in this tab contain mail task enabling/disabling and list of test programs for sending. The test program will appear in the dialog box for selection when there is test data of a certain test program located in the installation directory of SMPS ATS system software. 'UUT Testing Date / Time' column indicates the last UUT test time sent of this test program. The UUT tested from hence will be sent when the next sending time reaches. You can modify the 'UUT Testing Date / Time' column in order to control what UUT to be sent.

9.3.13 Menu

[File]→[Open Log Database…]	Set for the report to be opened and generated.
[File]→[Save Current Tab…]	Save the current UUT report.
[File]→[Save All…]	Save all UUT reports.
[File]→[Print ("Courier New" Only…]	Print directly.
[File]→[Print Preview]	Preview the print contents.
[File]→[Print Setup…]	Set the printer.
[File]→[Print Option…]	Define the print options including skip page, header and page number.
[File]→[Exit]	End the program and return to SMPS ATS software main menu.
[View]→[Toolbar]	Set if display the toolbar.
[View]→[Status Bar]	Set if show the status bar.
[View]→[Set Font…]	Set the font for data display area.
[View]→[Reset Font (Report Format File)]	Use default font.
[View]→ [Set Color…]	Set the color for data display area.
[Show]→[Header]	Set if display the Header Information.
[Show]→[Pre and Post Test Sequences]	Set if show the report contents of Pre and Post test items.
[Show]→ Sequences Name and Pass / Fail]	Set if show the test item name and its test result.
[Show]→[Step No]	Set if show the test step no.
[Show]→[Sequences No]	Set if show the sequence number of test items.
[Show]→[TI Name]	Set if show the test item name.
[Show]→[Sequences Elapsed Time]	Set if show the time spend for the execution of each test item.
[Show]→[Separator]	Set if show the separator line between two test items.

[Show]→[Separator Option…]	Set the separator line style between two test items.
[Show]→[Start Position of Sequences Pass / Fail…]	Set the position of sequence pass and fail in the report.
[Show]→[Sequences…]	Set to display partial test sequences report.
[Show]→[All Sequences]	Set to display all test sequences report.
[Options]→[Auto Mail…]	Set when to send the mail and recipient's mail address.
[Options]→[Fail Reading…]	Set if add an ID character before Fail Reading.
[Help]→[Contents]	Display the table of contents for the online documentation.
[Help]→[About RptGen]	Display the version information of this program.

10. Managing System Available Resources

In SMPS ATS software main menu select **Management** option from System group to enter Management function. It has User (for management), Activity Log (for browsing), Test Program (for management), User Defined Test Item (for import/export), Instrument (for instrument and driver management), H/W Configuration (for instrument configuration file management), Log Data (for test result data management), Fixture ID (for test fixture ID management) and Net Extension (for network related extension) nine sub-functions. They are described as below.

10.1 User – User Management Function

Click 'User' tab to display User Management Function screen. In this system user level is divided by functions of which can be used. Every user has a user level. If two users use the same Level Name, the functions these two users can use are the same.

10.1.1 User Name

In 'User' tab click User ID to show the defined user and its related information. It has User Name, Level Name, Expired Date, Comment and Active columns.

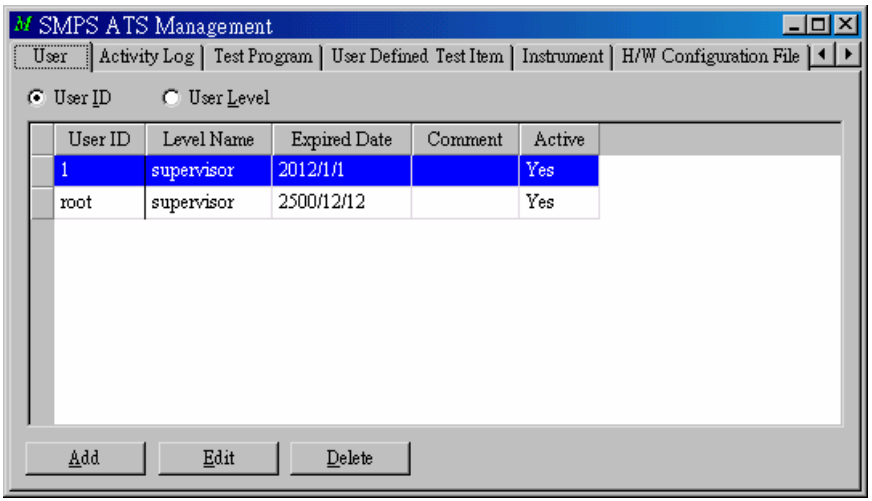


Figure 10-1 User Management Window

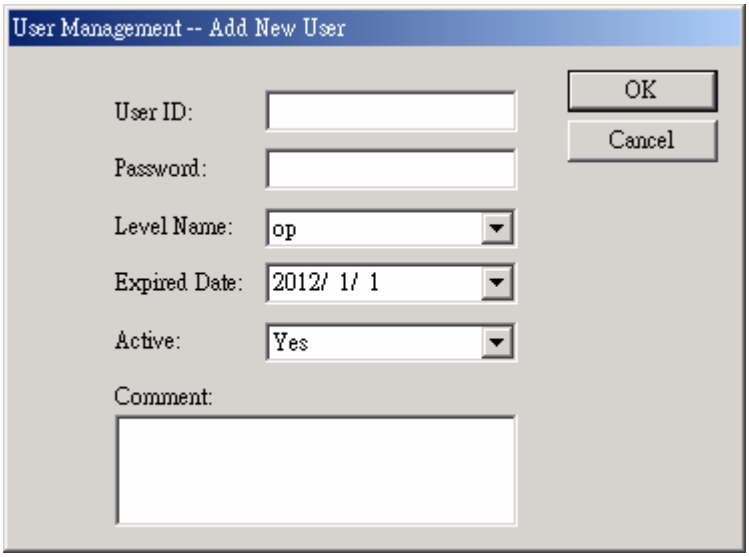


Figure 10-2 Add New User Dialog Box

Add Add new user. Input all information for the items listed above with user password.

Edit Edit the selected user information.

Delete Delete the selected user.

10.1.2 User Level

In 'User' tab click User Level to show the defined user level with the functions of which can be used.

It has two default user levels in the system. They are op and supervisor. The op user level will automatically go to GO/NOGO function, while the supervisor user level can use all functions when entering the system. These two user levels cannot be deleted or modified.

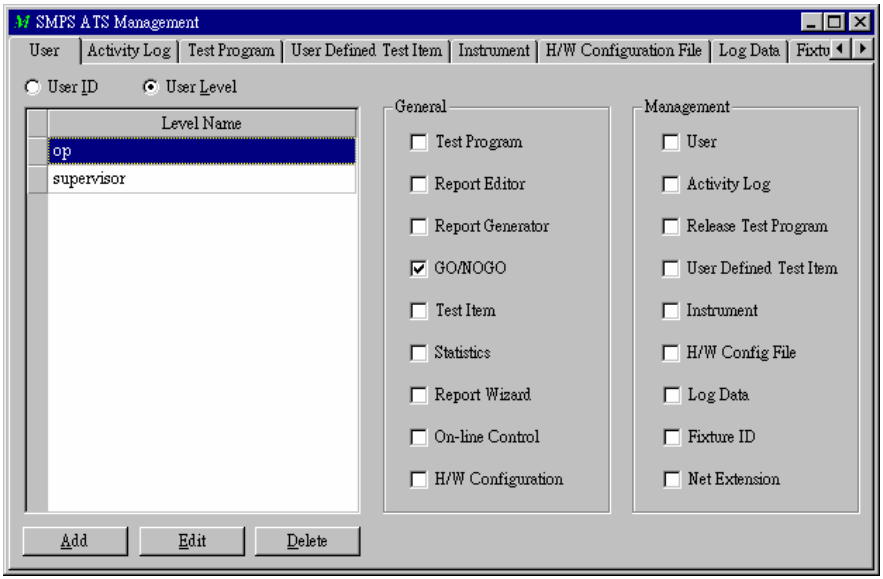


Figure 10-3 User Level Setting Window

Add Add new user level. The Edit and Delete button will change to Update and Cancel button after clicked this button. Click Update button after completing input, or click Cancel button to cancel the action.

Edit Edit the selected level. The Edit and Delete button will change to Update and Cancel button after clicked this button. Click Update button after completing input, or click Cancel button to cancel the action.

Delete Delete the selected user.

10.2 Activity Log – User Activity Log Browsing Function

Click 'Activity Log' label to show the user activity log browsing function screen. This system will log the time the user enters and exits SMPS ATS software as well as what functions the user had used.

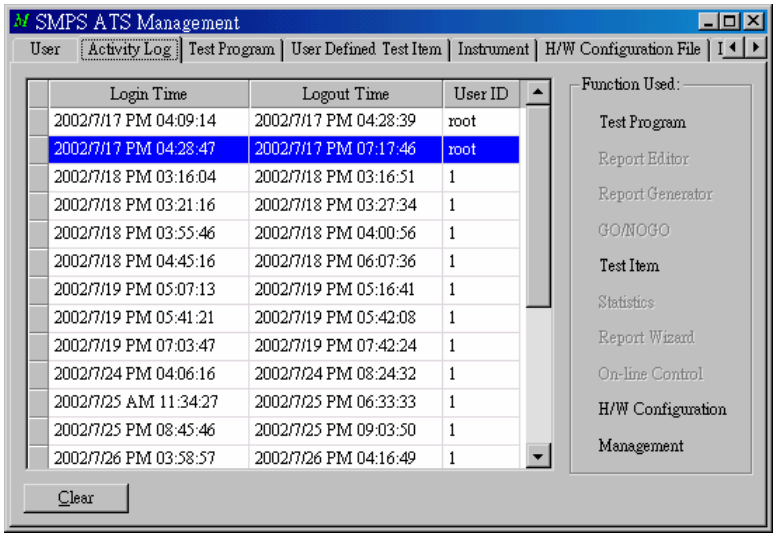


Figure 10-4 User Activity Log Browsing Window

Clear Clear all user activities log.

10.3 Test Program – Test Program Management Function

Click 'Test Program' label to show the test program management function screen. It can change the release status of test programs, and import/export or delete them.

The test programs exported and the report format data used will be logged in the files with tpx extension when exporting test programs. The same file will be read when importing them. Through the import/export test program function, you can use different Chroma 8000 systems for same test program without reediting the test program.

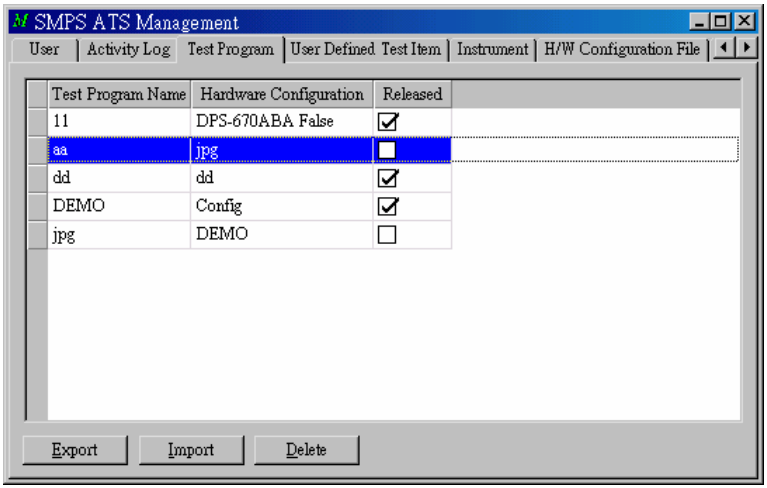


Figure 10-5 Test Program Release Window

Export Export the selected test programs including the report format files used and the hardware configuration files.

Import Import test programs including the report format files used and the hardware configuration files. If same test program with same filename exists in the system, or the test program is not yet released, it will inquire for permission to overwrite. If there exists different released test programs in the system but in the same filename, import is not allowed.

Delete Delete the selected test programs.

10.4 User Defined Test Item – Import/Export Function

Click the 'User Defined Test Item' label to show the user defined test item import/export function screen. It can export, import or delete the user defined test items. Through these functions you can use different Chroma 8000 systems for same user defined test item without reediting it.

As Figure 10-6 shows below the tree directory at left is able to classify the test items. Click the "User Define Test Item" node and select **Add** → **New TI Group Item** to add a new group such as "A". Every group has three types of test items including UUT-Test, Pre-Test and Post-Test.

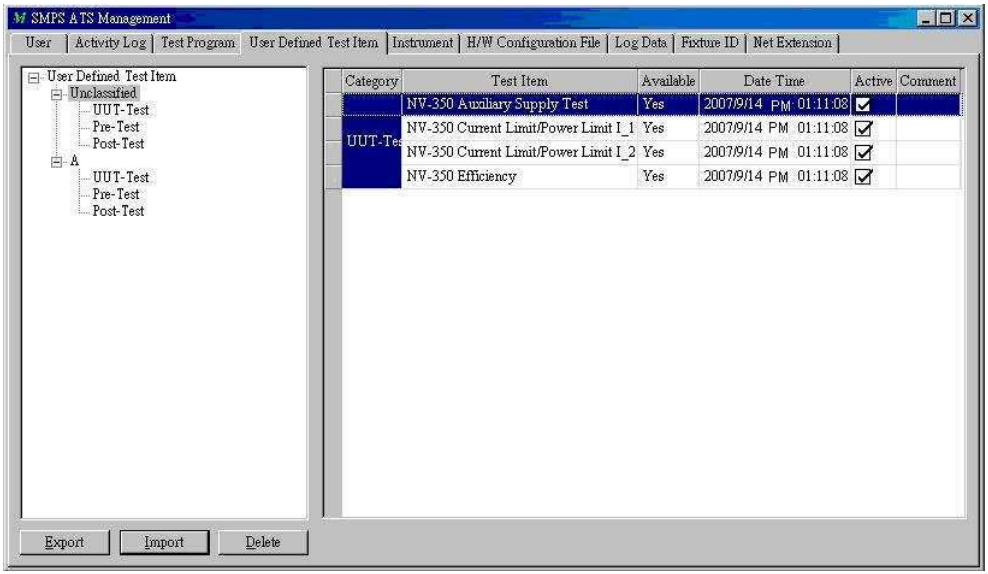


Figure 10-6 User Defined Test Item Import/Export Window

As Figure 10-7 shows **Rename** and **Delete** will appear when right click the node to allow you to rename or delete the group. (Note: The group cannot be deleted when there is test item underneath.)

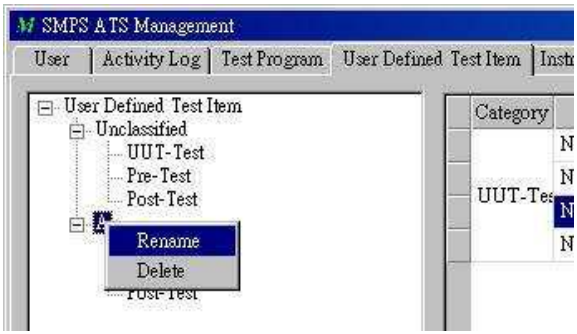


Figure 10-7 Delete or Rename the Group

As Figure 10-8 shows **Move to 'xxx'** will appear when right click the test item. It is able to move the test item to other group where xxx is the group name for instance "A" in the above example.

When the test item exports it will be logged in a file with the extension .tix and this type of file will be read when importing test items.

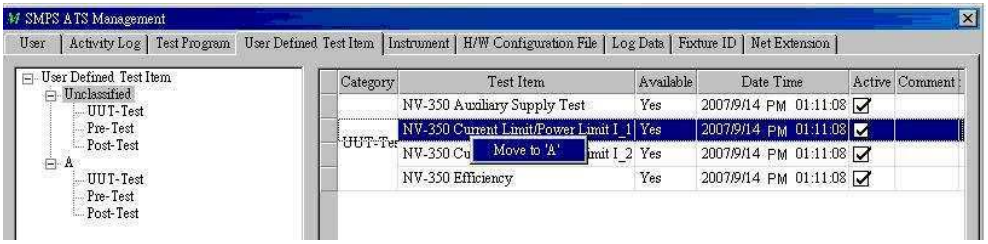


Figure 10-8 Move the Test Item to Different Group

Active	Enable/disable the selected test item. Once the test item is disabled, 'Test Program Editor' cannot access this test item.
Export	Export the selected test items.
Import	Import test items. If the system already has the test item with same name, it will inquire if you want to change the name.
Delete	Delete the selected test items. **Notice:** Once you delete the test item, all test programs that used this test item cannot edit it in 'Test Program Editor'.

10.5 Instrument – Instrument and Driver Management Function

Click 'Instrument' label to show the instrument and driver management function screen. When the instrument is needed but not in the screen, please contact the dealer or Chroma to see if the instrument driver is available. When the instrument and its driver are exported, they will be saved to a file with inx extension. The same file type will be read when importing.

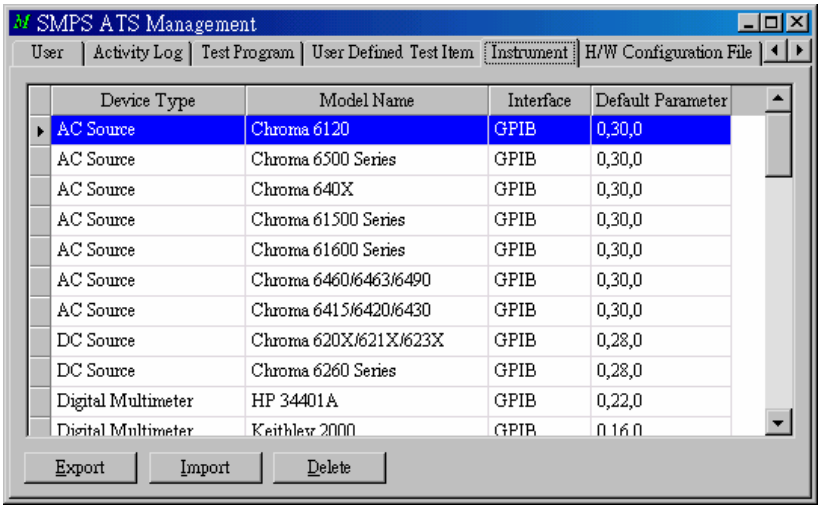


Figure 10-9 Instrument and Other Driver Program Management Window

Export Export the selected instruments and its driver programs.

Import Import instruments and its driver programs. If the system already has the instrument with same name, it will inquire if you want to overwrite.

Delete Delete the selected instruments.

10.6 H/W Configuration – Configuration File Management Function

Click 'H/W Configuration File' tab to display the instrument hardware configuration file management function screen. You can export, import or delete the hardware configuration file using this function.

When using the export function, it will log the selected hardware configuration files to a file with hwx extension, and this type of file will be read when importing the hardware configuration file.

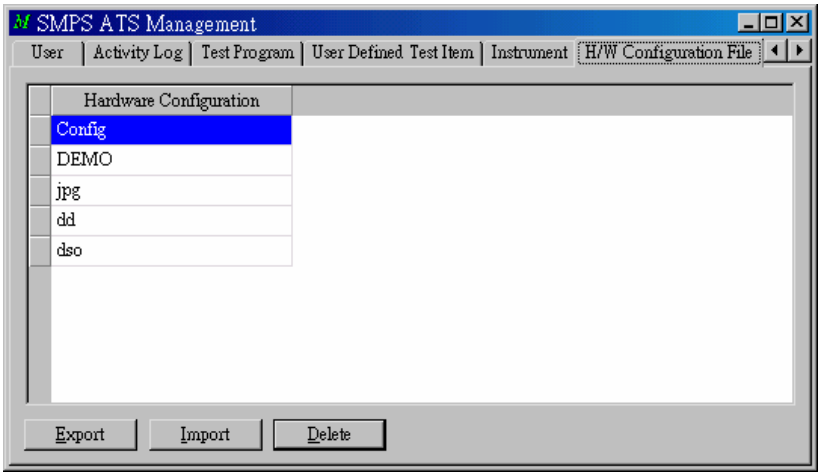


Figure 10-10 Hardware Configuration File Management Window

Export Export the selected hardware configuration files.

Import Import the hardware configuration files. After selected the hwx filename extension, the program will list all hardware configuration files in one window for you to select. If there is duplicate hardware configuration file, the system will ask you if you want to change the filename.

Delete Delete the selected hardware configuration files.

10.7 Log Data - Test Result Data Management Function

Click 'Log Data' tab to display the screen for test result data management. With this function you can export, import or delete the test result data. You can use the test result data to do report printing and statistic analysis in different Chroma 8000 systems via the export and import function.

When exporting the test data, the test result data is logged in a file with filename extension lgx. This file will be read when importing the test result data.

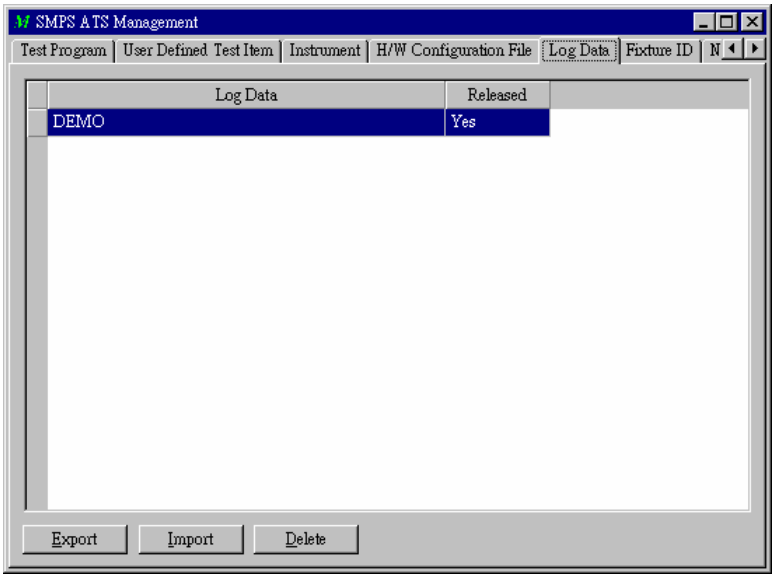


Figure 10-11 Log Data Window

Export	Export the selected test result data.
Import	Import the test result data.
Delete	Delete the selected test result data.

10.8 Fixture ID – Fixture Model Management

Click 'Fixture ID' to show the Fixture Model management screen where can export, import or delete the fixture model. Only the models list in this screen can be utilized in test program to work with Fixture ID Card for status check. For details see Fixture ID Card User's Manual.

The export function will log the selected models to a file with extension name fix, and this file is read during import. Once the Fixture ID Editor created a new model ID for fixture, first export it to a fix file using the Export utility in Fixture ID Editor and then it can be imported to the system.

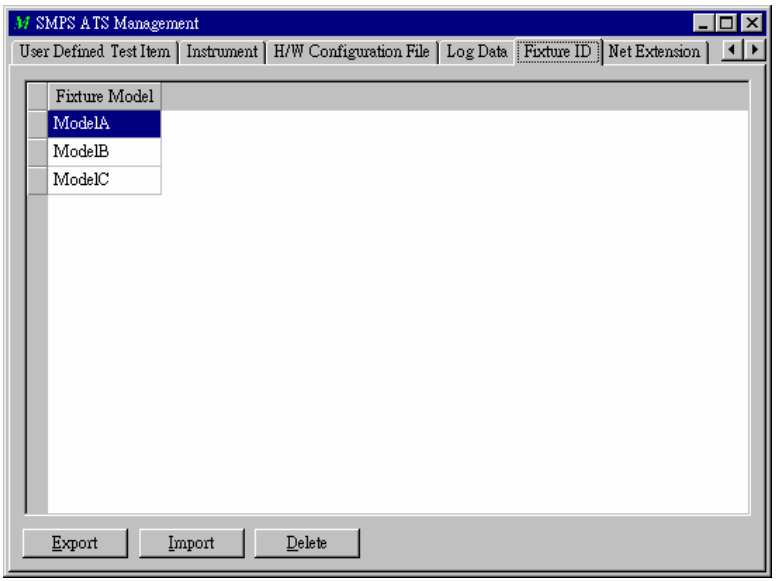


Figure 10-12 Fixture ID Management

Export Export the selected models.

Import Import the suitable fixture models. When the extension filename fix is selected, the program will list all models in one window for selection.

Delete Delete the selected models.

10.9 Net Extension – Network Related Extension Function

Click 'Net Extension' tab to display the screen for network related extension function. It has Remote TP function only at present of which can export the test programs to a specified remote directory, and allow different Chroma 8000 systems to open them directly in GO/NOGO program for test, thus the test programs can be centralized for management.

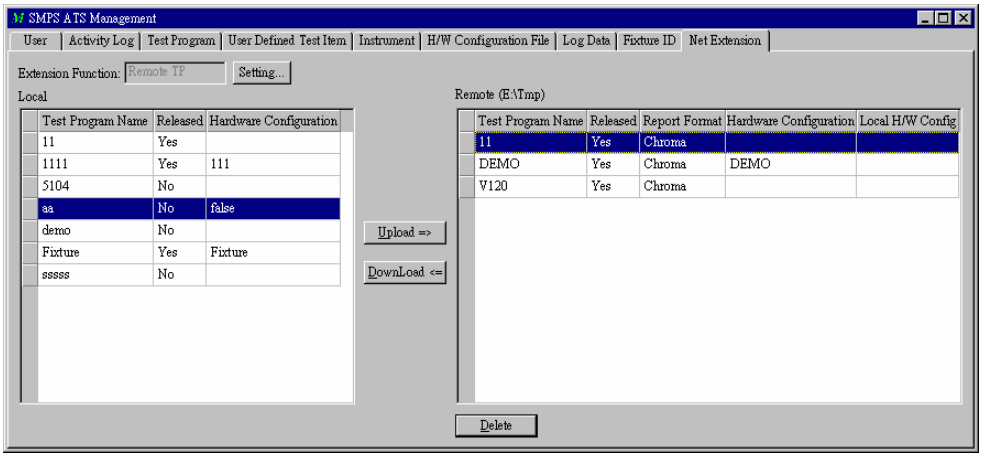


Figure 10-13 Net Extension Window

Setting… To enable/disable the Remote TP function and set the directory where Remote TP is in. All Chroma 8000 systems that use Remote TP have to enable Remote TP and set correct director path. The enabled Remote TP affects GO/NOGO only so that it can only open the test program of Remote TP without change the rest of the function in Chroma 8000 system.

Upload Export the selected test program in Chroma 8000 system to remote.

Download Import the selected test program from remote to Chroma 8000 system.

Delete Delete the selected test program in remote.

Local H/W Config: If a hardware configuration file required by Chroma 8000 system is different from the Remote TP, the Local hardware configuration can be selected in the Local H/W Config column at the right of the table.

11. Editing User Defined Test Item (Option)

Test Item Editor is the tool developed specially for SMPS ATS software testers. It lets testers to define the test process flow based on their needs and to name it as well as to integrate it to SMPS ATS software. The test item you added is called User Defined Test Item to differentiate from the default test item set in SMPS ATS software.

Test items are divided into six types. System Default and User Defined are the two major types. Each major one has three groups, which are Pre Test, UUT Test and Post Test. Following explains the timing for using these three groups.

Group Name	Description
Pre Test	Before executing the test program for the first time in the running environment, the test item in this group will be executed by test program.
UUT Test	Every time the test program executes in the running environment, the test item in this group will be executed by test program.
Post Test	Before the running environment exits, the test item in this group will be executed by test program.

Below describes the detail of each type.

Type	System / User Defined	Pre Test/ UUT Test /Post Test	Description
1	System	Pre Test	System default for Pre Test
2	System	UUT Test	System default for UUT Test
3	System	Post Test	System default for Post Test
4	User Defined	Pre Test	User Defined for Pre Test
5	User Defined	UUT Test	User Defined for UUT Test
6	User Defined	Post Test	User Defined for Post Test

Test Item editor contains five tabs. The detail descriptions are as below.

Tab Name	Description
Test Procedure	This tab lists the Test Commands in the Test Item and displays them line by line as writing BASIC language. It calls function line by line and runs jump function to reach the test purpose.

Condition	This tab lists the conditions or specification values the Test Item will use and displays them line by line. When you edit the Test Command in Test Procedure tab, you can fill in the Call Name to the Parameters column in Test Procedure tab. This tab's contents will appear in the parameter window when you edit a Test Item parameter in Test Program.
Result	This tab lists the results that the Test Item will use and displays them line by line. When you edit the Test Command in Test Procedure tab, you can fill in the Call Name to the Parameters column in Test Procedure tab.
Temporary	This tab lists the temporary variables the Test Item will use and displays them line by line. When you edit the Test Command in Test Procedure tab, you can fill in the Call Name to the Parameters column in Test Procedure tab.
Global	This tab lists the global variables the Test Item will use and displays them line by line. When you edit the Test Command in Test Procedure tab, you can fill in the Call Name to the Parameters column in Test Procedure tab.

A test item is composed of the above five items. Similar to the program language procedure or function, the test procedure maps to the procedure flow, which has variables. These variables are inducted to four types. The first type is Test Condition, which is also called input variable to log the parameter value and specification you reserved. This type Test Condition appears on the test item editor screen in Chapter 1. The second type is Test Result, which is used to log the last test result. The third type is Temporary Variable to log the temporary value in calculation process. The last type is Global Variable that enables test item to pass some values to other test items.

Please be noted that the editing environment must request the declared variable Call Name is unique in a test item. In addition please do not use special symbols such as comma ",", semicolon ";", star "*", backslash "\" or number "#" as part of Call Name. For example, "Volt,age" may cause problem when creating the statistic report.

Figure 11-1 uses C language program Function to explain Test Item and its relationship between variable declarations and flow control.

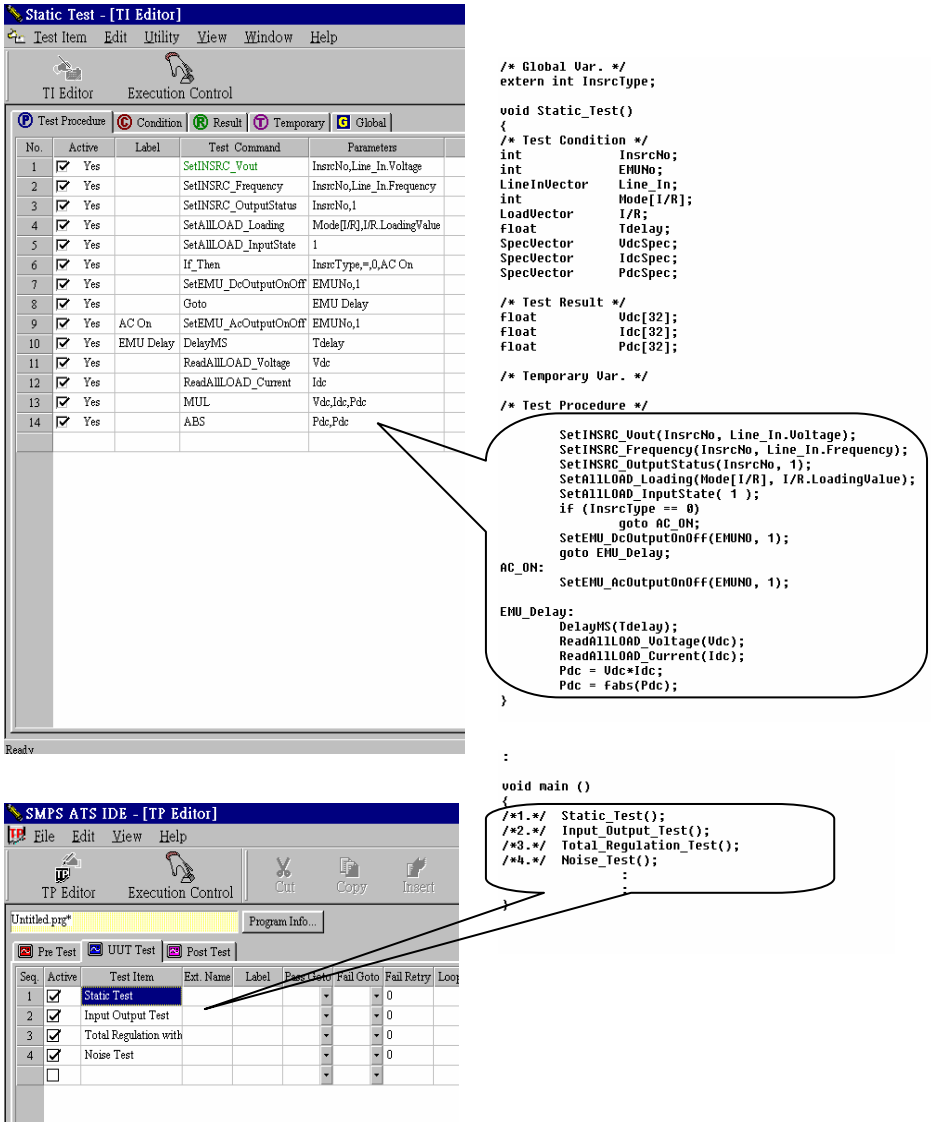


Figure 11-1 Mappings between Test Item, Test Program, and C language

11.1 How to Create a Test Item

Click **Test Item** button in SMPS ATS software main menu to enter the Test Item Editor main menu. It will prompt the dialog box as Figure 11-2 shows. You can select [New Test Item] to create a new item or select [Open Test Item] to open an existing one.

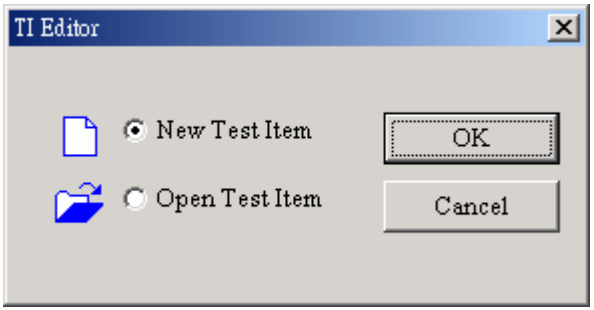


Figure 11-2 New/Open Test Item

Of course these two methods for creating new or modifying existing test item are also provided in Test Item Editor function menu.

1. You can select **[Test Item]→[Open]** to open an existing test item for modification and save it as new one.
2. You can select **[Test Item]→[New]** to edit the contents of Condition, Result, Temporary or Global. Then create the Test Procedure line by line.

Editing environment will automatically add a variable with the Call Name of "TestResult" in Result tab when you create a new set of test items. This variable is required for every test item; however you are unable to see this variable on the screen. So you need to be careful not to use "TestResult" as variable Call Name.

11.2 How to Edit a Test Item

Select **[Test Item]→[Open]** will prompt the dialog box as Figure 11-3 shows. If the Test Item selected is System type, then the editor will ask you to input a new name to save it as new because the system default test item is not allowed for modification. If the selected type of Test Item is User, different "Test Item Group" can be chosen. The group classification is set in Management and the test items without classification is placed in "Unclassified" by default.

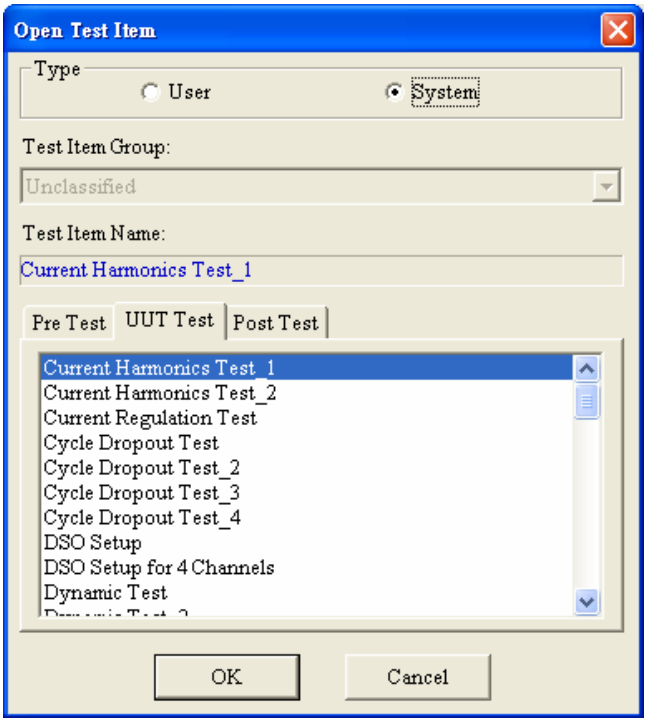


Figure 11-3 Open Test Item

If you select **[Test Item]→[New]** it will prompt the dialog box as Figure 11-4 shows. Editor will automatically categorize the test item to User (user defined) before saving it.

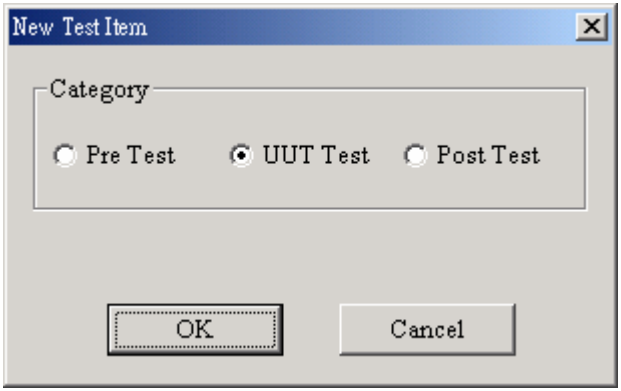


Figure 11-4 New Test Item

Click **[Test Item]→[Save As]** a dialog box will appear as Figure 11-5 shows and users can click **Security** to set security as Figure 11-6 shows. Users can specify Complete or Read only protection. Users are unable to open the test item if he or she has no password when in Complete protection mode. Users can open the test item without password when in Read only protection mode; however for the encrypted test items editing and save are still not allowed and are unable to be processed line by line during program execution.

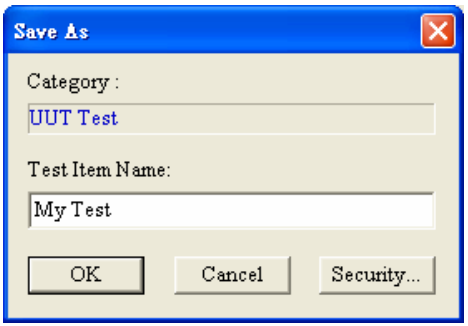


Figure 11-5 Saving Test Item

Figure 11-6 Setting Security Password

The **[Edit]** item in the main menu has **[Cut], [Copy], Paste], [Insert]** and **[Delete]** five actions. These actions can be performed at the row where the pointer is in the active tab (see Figure 11-7). The editing functions are different from each column in the tab. Following explains them by tab.

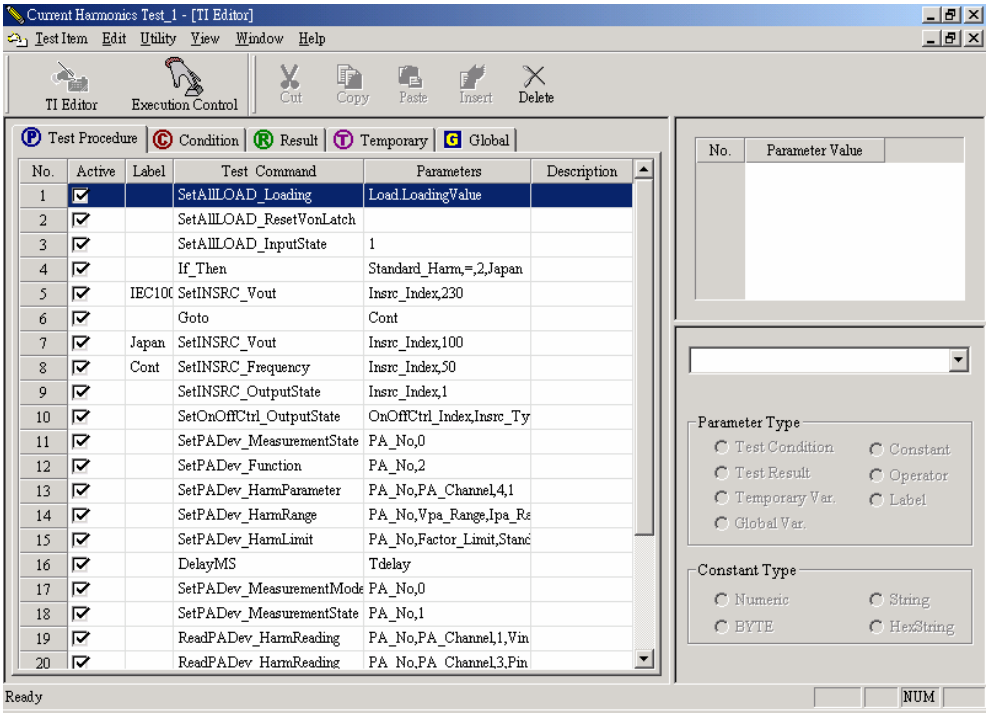


Figure 11-7 Editing by Row

11.2.1 Data Type

In order to meet the test requirement of your test program for inputting different settings and saving the measurement values from other instruments, this system software supports the data type listed below, except Vector. Following is the detail description of each data type.

Type	Application	Description
Float	TC/TR/TT/GV	Floating point.
Integer	TC/TR/TT/GV	Integral.
Float%	TC/TR/TT/GV	Floating point. When the report generator appears, it will automatically add a % symbol to this variable.
Short	TC/TR/TT/GV	Short integral.
String	TC/TR/TT/GV	Text string without fixed length.
Byte	TC/TR/TT/GV	Single byte.
Float[L]	TC/TR/TT/GV	Float Array is 32. L is the maximum UUT output numbers supported, which are 32 in this system.

Integer[L]	TC/TR/TT/GV	Integer Array is 32. L is the maximum UUT output numbers supported, which are 32 in this system.
Float%[L]	TC/TR/TT/GV	Float% Array is 32. L is the maximum UUT output numbers supported, which are 32 in this system.
HexString	TC/TR/TT/GV	Hexadecimal string from left to right maps to the low bit to high bit in memory.
Float[ ]	TC/TR/TT/GV	Float Array without fixed size.
Integer[ ]	TC/TT/GV	Integer Array without fixed size.
LineInVector	TC/TT/GV	Vector type. This type consists of two Member Data. 1. Voltage: Float 2. Frequency: Float
LoadVector	TC/TT/GV	Vector type. This type consists of one Member Data. 1. Loading Value: Float[L]
SpecVector	TC/TT/GV	Vector type. This type consists of two Member Data. 1. Minimum Spec: Float[L] 2. Maximum Spec: Float[L]
ExtMeasVector	TC/TT/GV	Vector type. This type consists of three Member Data. 1. Function Type: Integer[L] 2. Ext. Meas. Minimum Spec: Float[L] 3. Ext. Meas. Maximum Spec: Float[L]
Chart	TR/TT	Data structure for DSO graphic file.
Picture	TR/TT	Data structure for saving DSO result.

Note: Application description
TC→ Test Condition tab variable
TR→ Test Result tab variable
TT→ Temporary tab variable
GV→ Global tab variable

11.2.2 Editing Test Procedure

Test Procedure tab lists the test item execution flow. Click the Test Command the screen right window will appear the test commands in tree structure by command type as Figure 11-8 shows. If you need the parameter contents for test command, click the Parameters column on the test command you want to edit and two windows will appear at the right of the screen. The upper window displays the parameter contents, while the lower window is the

area for variable or constant. See Figure 11-23. For the jump condition test commands like "Goto" and "If_Then", you can fill in the label name in the Label column.

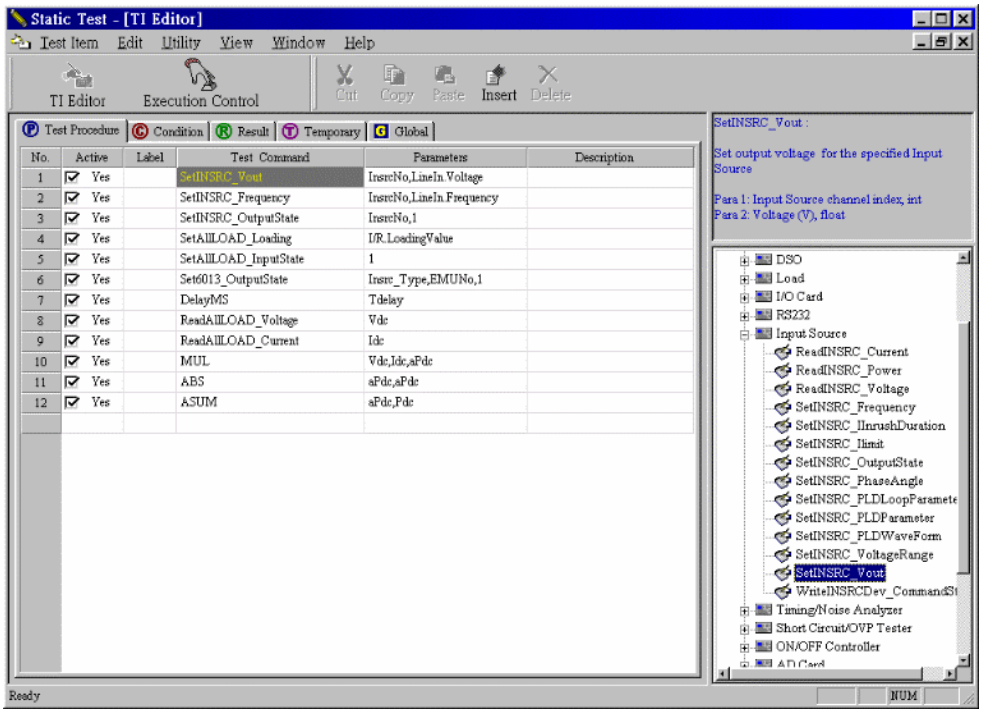


Figure 11-8 Select Test Command Screen

The right window is divided into two panes in Figure 11-9. The upper one shows the contents of the parameter activated by the pointer in the left window and it will follow the function prototype defined in Test Command column (please see Figure 11-12) to list the variable mapping position. The lower pane provides you a way to select parameter. The program will fill in the parameters automatically to the reversed area in the upper pane. Parameter Type group in the lower pane can define the parameters you need from Condition and Result tabs. The system can help you filter out the same type parameters.

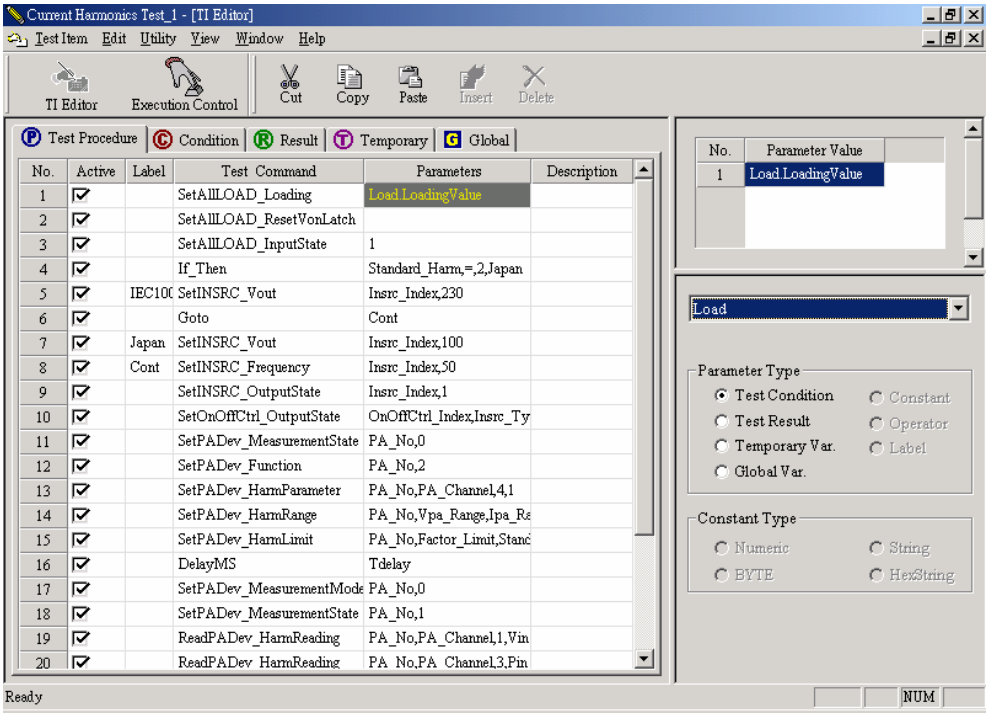


Figure 11-9 Select Input Parameter

If the parameter type you selected is Vector then the screen will prompt a window as Figure 11-10 to let you further define its entry data.

Figure 11-10 Vector Type Entry List Box

Following table explains the way to edit each column.

Column	Description	How to edit
Active	Enable or disable the Test Command of this row	Click to select/ unselect it.
Label	List the label of every Test Command. It can be used as the parameter in the jump condition test command such as "If_Then".	Double-click it and enter the data from keyboard.
Test Command	Power Supply ATS provides a bunch of test command sets and this column shows one of them.	Click it the screen will show the test command set to include all of them in Figure 11-8. If click the right mouse button, the screen will show a message dialog box as Figure 11-11 to display the Test Command help.
Parameters	Test Command parameter. As the parameter number is different from every Test Command, thus the parameters are separated by ",".	Double-click will appear two windows as in Figure 11-9. The upper-right window lists parameter's position, while the lower one has parameter attribute, which is up to the Test Command's parameter. When you select a certain parameter attribute, a list box of related parameter will show up for selection.
Description	Explanation text.	Double-click it and enter the data from keyboard.

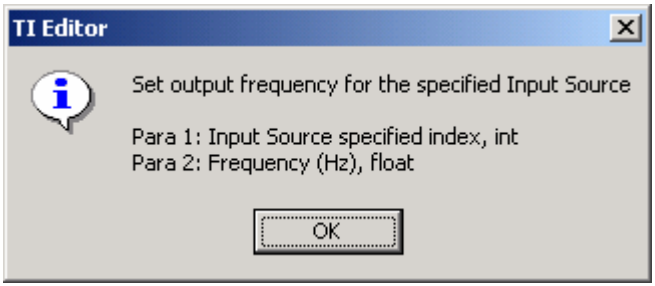


Figure 11-11 Test Command Help Window

11.2.3 Declaring Test Condition

Condition tab lists input parameter or specifications of the Test Item. The way to edit the columns in this tab is different. You can double-click it and enter the data from keyboard or edit the dialog box prompted or select the condition from the drop-down list box by clicking the mouse.

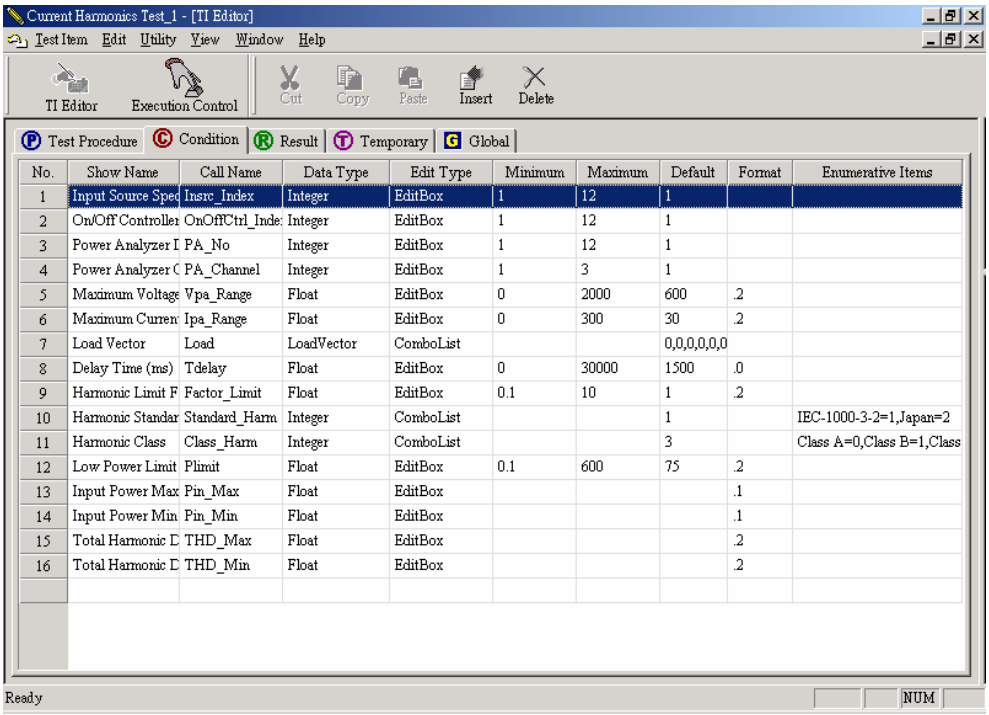


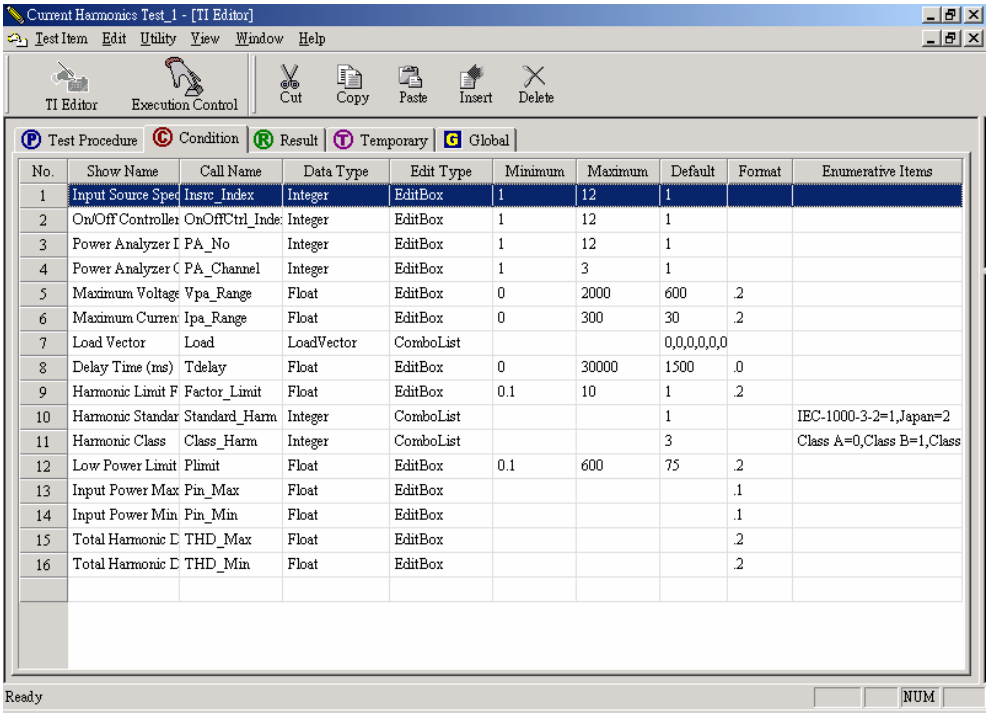
Figure 11-12 Test Condition Parameter Editing Screen

Following table explains the way to edit the columns in condition tab.

Column	Description	How to edit
Show Name	Parameter name. Used for Help.	Double-click it and enter the data from keyboard.
Call Name	Parameter name. The parameters in the same test item should be unique when using in running environment.	Double-click it and enter the data from keyboard.

Data Type	Parameter's data type.	After clicked for selection, a drop-down ListBox of all data types like float and integer, etc. will show up.
Edit Type	Parameter's edit type. This type will affect the test program editing function screen if in EditBox. If in ComboList, then it lists the items such as CC, CR and CV.	After clicked for selection, a drop-down ListBox of EditBox and ComboList edit type will show up.
Min.	The minimum value of the parameter.	Same as "Default" column description.
Max.	The maximum value of the parameter.	Same as "Default" column description.
Default	The default value of the parameter.	Double-click it and enter the data from keyboard. If this parameter maps to the Load Array data type, the window as Figure 11-15 will prompt. If the data type is Vector, it will show the window as Figure 11-16.
Format	The parameter format displays in test program editing function.	Click to prompt a drop-down list box.
Enumerative Items	If "Edit Type" column is ComboList, it will enumerate the item values and display strings that defined in the list box.	Double-click it enables you to edit Figure 11-17 for enumerated data editing.

Notice: If you don't want to specify the value for Min. and Max. columns, you can set them to Don't Care (*) in 'Test Program Editor'.



No.	Show Name	Call Name	Data Type	Edit Type	Minimum	Maximum	Default	Format	Enumerative Items
1	Input Source Spec	Insrc_Index	Integer	EditBox	1	12	1		
2	On/Off Controller	OnOffCtrl_Inde	Integer	EditBox	1	12	1		
3	Power Analyzer I	PA_No	Integer	EditBox	1	12	1		
4	Power Analyzer C	PA_Channel	Integer	EditBox	1	3	1		
5	Maximum Voltage	Vpa_Range	Float	EditBox	0	2000	600	.2	
6	Maximum Curren	Ipa_Range	Float	EditBox	0	300	30	.2	
7	Load Vector	Load	LoadVector	ComboList			0,0,0,0,0,0		
8	Delay Time (ms)	Tdelay	Float	EditBox	0	30000	1500	.0	
9	Harmonic Limit F	Factor_Limit	Float	EditBox	0.1	10	1	.2	
10	Harmonic Standar	Standard_Harm	Integer	ComboList			1		IEC-1000-3-2=1,Japan=2
11	Harmonic Class	Class_Harm	Integer	ComboList			3		Class A=0,Class B=1,Class
12	Low Power Limit	Plimit	Float	EditBox	0.1	600	75	.2	
13	Input Power Max	Pin_Max	Float	EditBox				.1	
14	Input Power Min	Pin_Min	Float	EditBox				.1	
15	Total Harmonic D	THD_Max	Float	EditBox				.2	
16	Total Harmonic D	THD_Min	Float	EditBox				.2	

Figure 11-13 General Editing Type

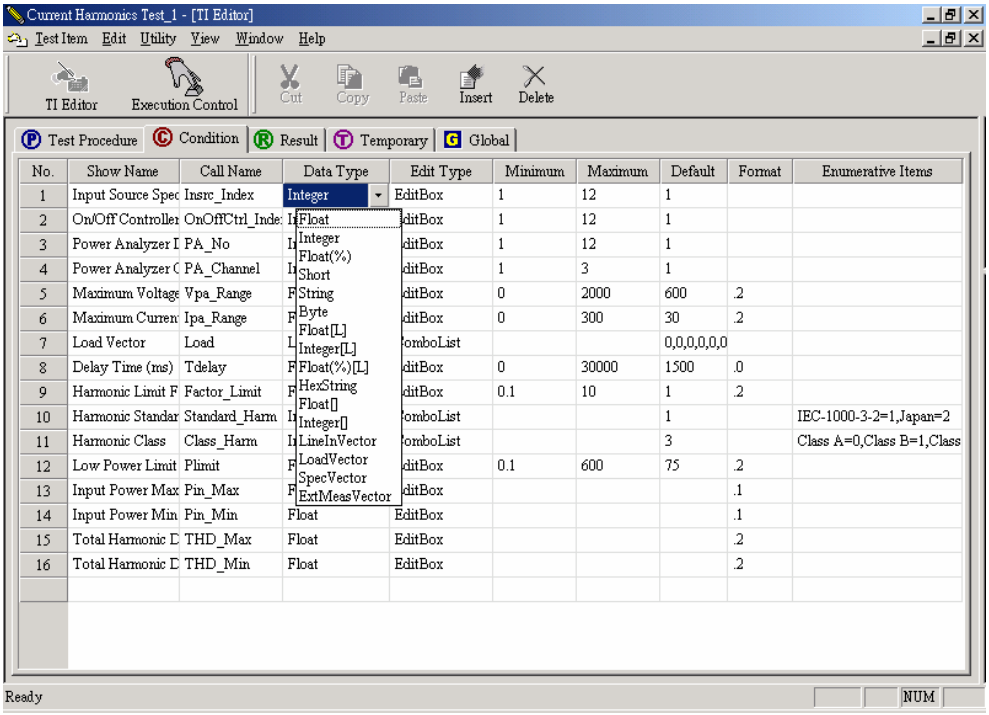


Figure 11-14 List Box Selection Type

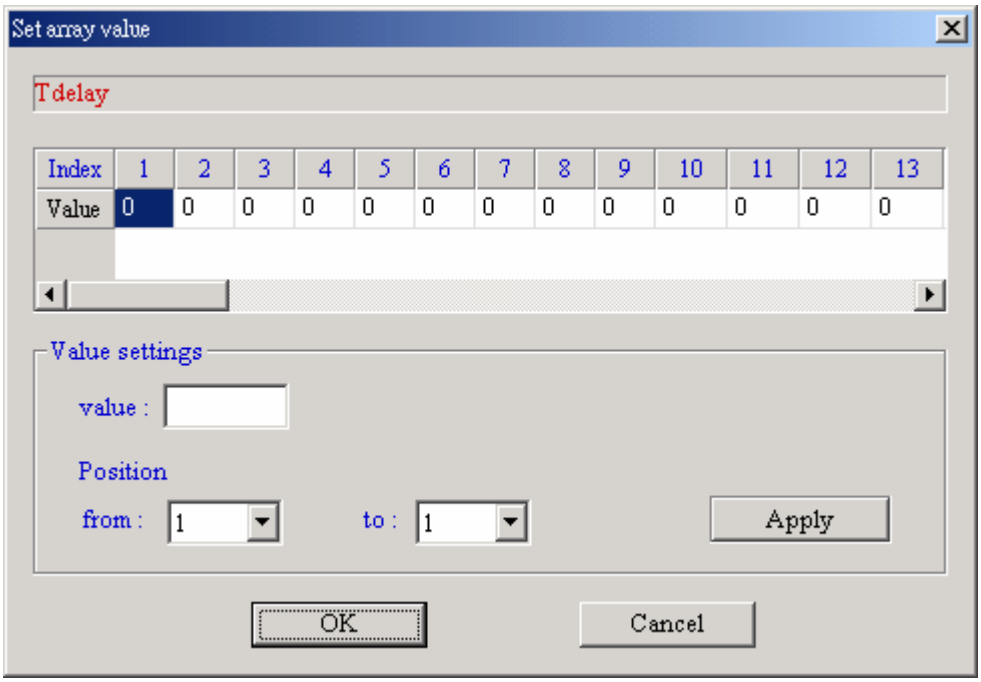


Figure 11-15 Array Type Value Editing Screen

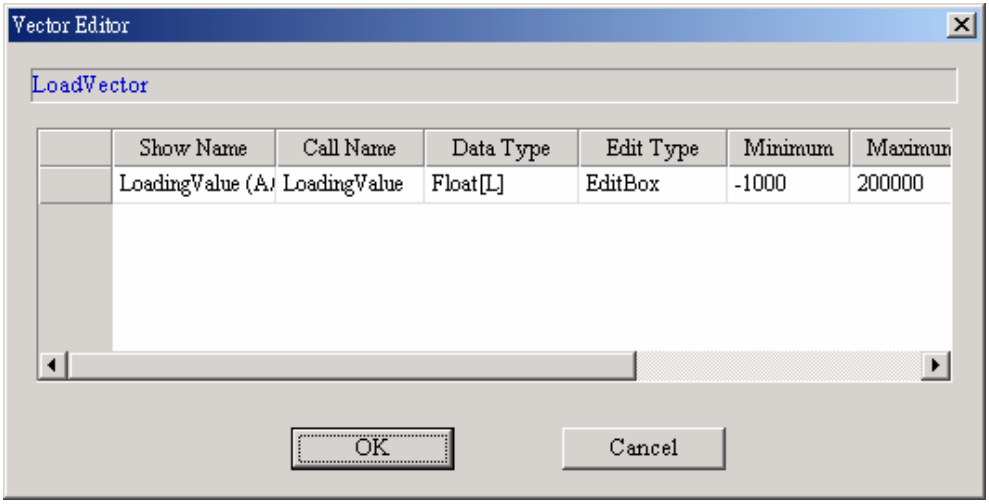


Figure 11-16 Vector Type Value Editing Type

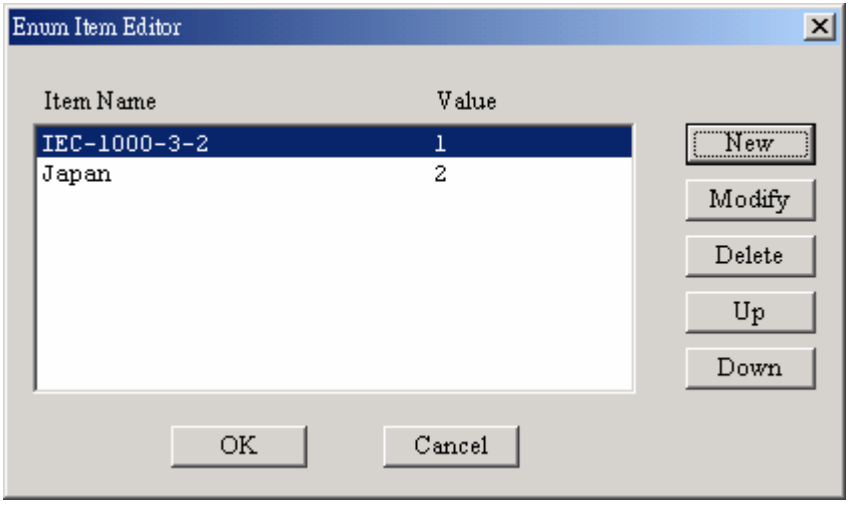


Figure 11-17 Enter Enumerate Entry

11.2.4 Declaring Test Result

Result tab lists the variables that used by test commands to save the measurement readings in the test item. Besides the editing methods described in the previous Condition tab, you can specify the specification you want to compare the “Min. Spec.” and “Max. Spec.” columns for every variable as Figure 11-19 shows.

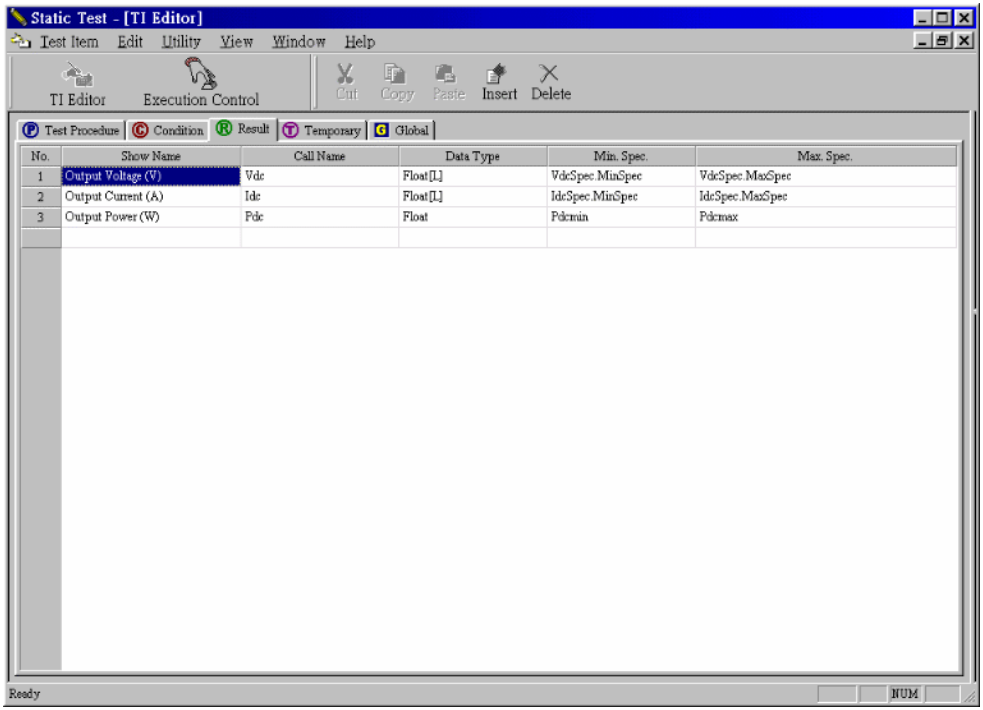


Figure 11-18 Test Result Variable Editing Screen

Following table explains the way to edit the columns in Result tab.

Column	Description	How to edit
Show Name	Parameter name. Used for Help.	Double-click and enter the data from keyboard.
Call Name	Parameter name. The parameter in the same test item should be unique when using in running environment.	Double-click and enter the data from keyboard.
Data Type	Parameter's data type.	After clicked for selection, a drop-down ListBox of all data types like Float and Integer, etc. will show up.
Min-Spec	Minimum specification for parameter. When executing a row of parameters measured from instrument, they will be compared with Min-Spec for analysis.	After clicked for selection, a drop-down ListBox of all same data type Call Name in Condition tab will show up.

Max-Spec	Maximum specification for parameter. When executing a row of parameters measured from instrument, they will be compared with Max-Spec for analysis.	After clicked for selection, a drop-down ListBox of all same data type Call Name in Condition tab will show up.

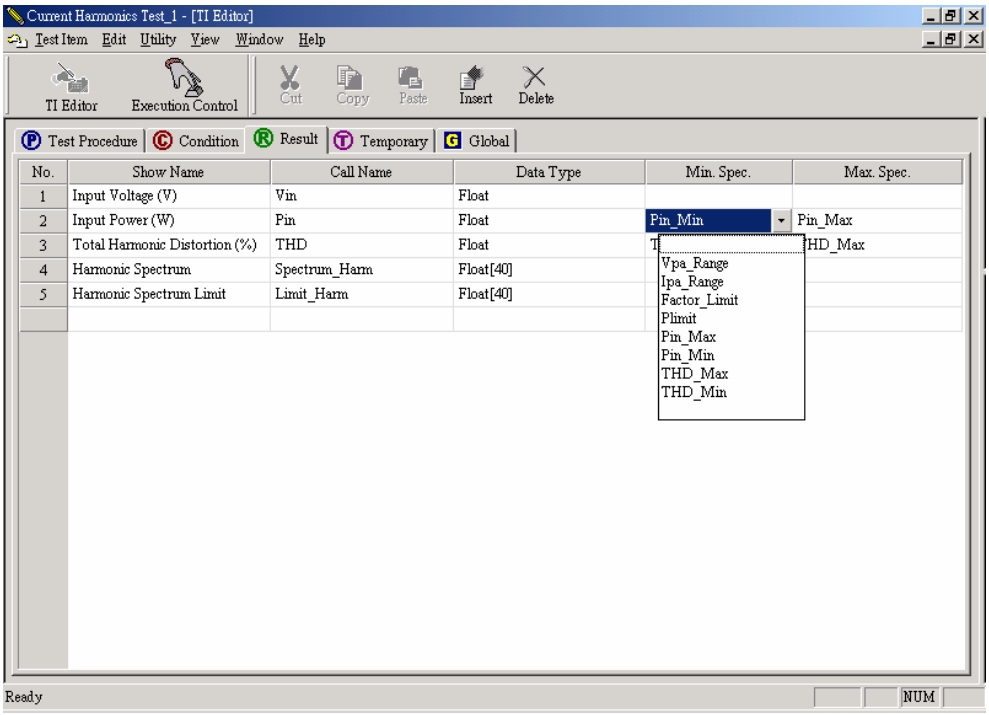


Figure 11-19 Test Specification Setting

11.2.5 Declaring Temporary Variable

Temporary tab lists the temporary variables that will be used by Test Item. The editing methods of each column in this tab are the same as editing the Condition tab.

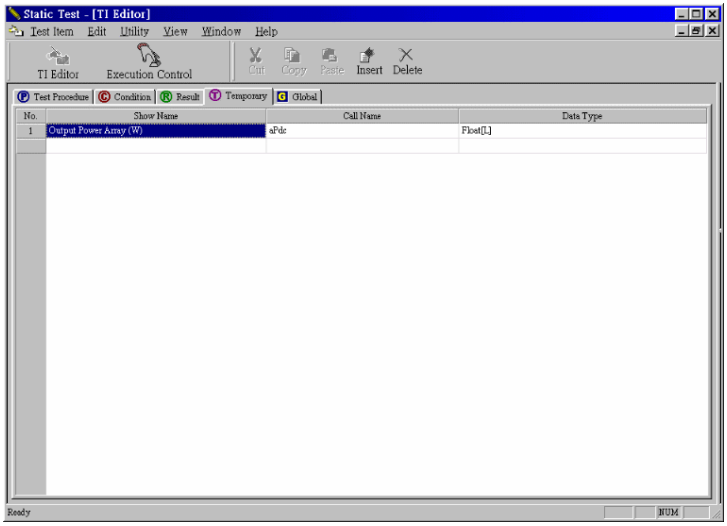


Figure 11-20 Temporary Variable Editing Screen

11.2.6 Declaring Global Variable

Global lists the global variables that will be used by Test Item. Different from Condition, Result, and Temporary, Global variable can be adopted by any of the six test item categories. The test items in the same category can access the variables declared here. If you want to access the global variable declared in different categories, you can specify it using the Linkage column. First enter the global variable of other category in the Call Name column, and select "External" in Linkage.

Except Linkage column, the editing methods for the rest columns are the same as editing in Condition tab.

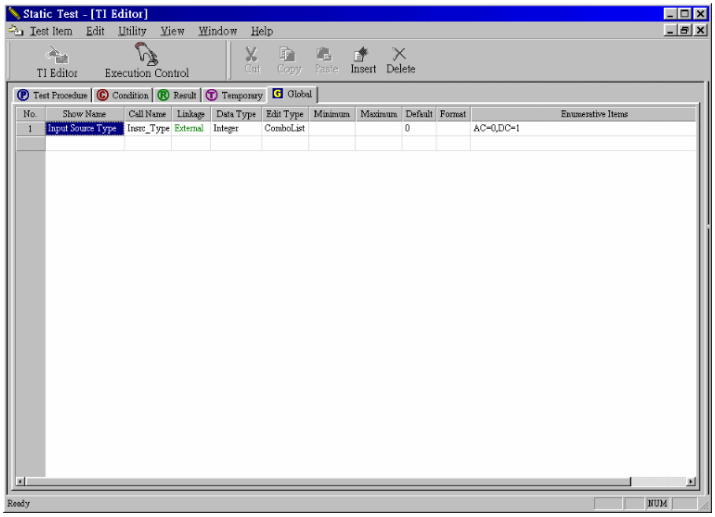


Figure 11-21 Global Variable Editing Screen

11.3 Auxiliary Functions

Under **[Test Item]** you will see **[Over All Check]**, **[Compile]**, **[Redundant Var. Check]**, **[Test Command Check]**, **[Local Var. Rename…]**, **[Parameter Find…]** and **[Find Next]** options. Their functions are explained as below.

11.3.1 Over All Check

Though every test item will check the variable type before saving, you can execute the function to check variable type anytime during editing.

11.3.2 Compile

To compile is to build up an internal table index to expedite the test program (.prg) execution speed. Similarly you can run the variable type check function anytime during editing.

11.3.3 Redundant Var. Check

You can use this function to check which parameter has been used and which has never been used.

11.3.4 Test Command Check

You can use this function to check what test command in Test Item is different from the one defined in database.

11.3.5 Local Var. Rename…

You can use this function to rename the parameter. After you selected **[Utility]→[Local Var. Rename…]** option, the screen will prompt the dialog box below. Once you clicked **OK**, all related areas will be renamed to the new parameter name.

Figure 11-22 Local Variable Renaming Dialog Box

11.3.6 Parameter Find…

When your test item process gets more and more complicate, this function provides you a rapid way to find a parameter location in 'Test Procedure'. After you selected **[Utility] → [Parameter Find…]** option, the screen will prompt a dialog box as Figure 11-23. Once **OK** is clicked, the pointer will stop at the Label column in 'Test Procedure' tab where the parameter is found. **Notice:** The Up and Down directions in Figure 11-23 are to define the

searching direction from the pointer position in 'Test Procedure'. Thus please make sure the pointer position in 'Test Procedure' before open the dialog box.

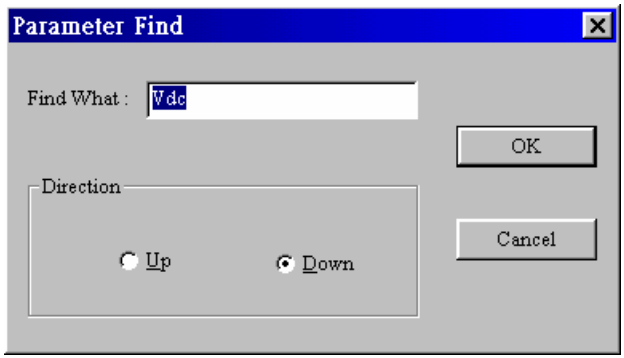


Figure 11-23 Parameter Find Dialog Box

Figure 11-24 and Figure 11-25 shows the pointer change in screen before and after finding.

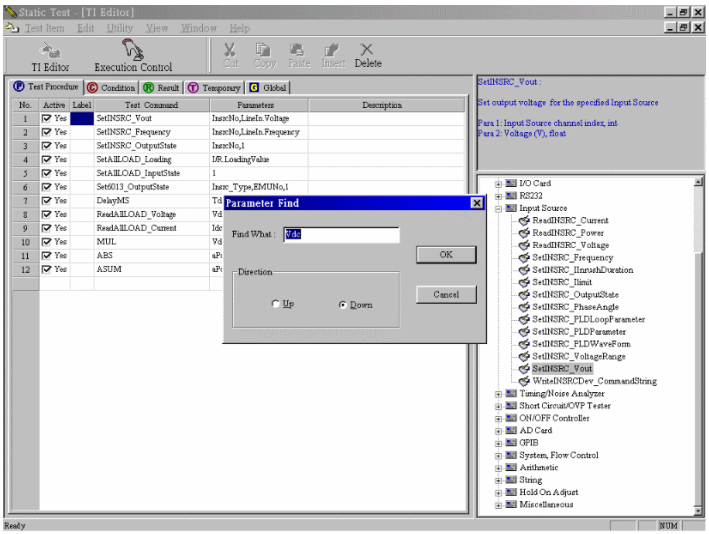


Figure 11-24 Before Finding the Parameter

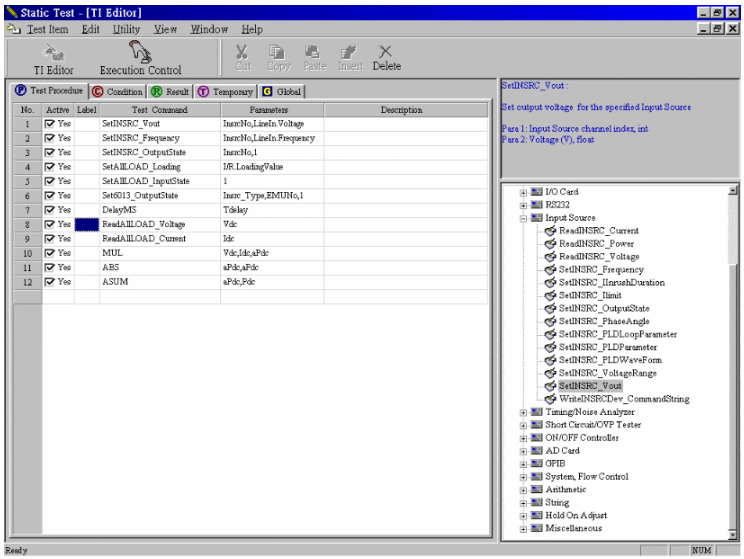


Figure 11-25 After Finding the Parameter

11.3.7 Find Next

You can use this function to continue finding the next parameter.

11.3.8 Option…

This function supplies a dialog box for you to set the parameter need for Detail Test when you switch to execution environment. Please see the descriptions in section 11.6.

11.4 Printing Page Contents

Click **[Test Item] → [Print]** will display the print dialog box. Click **OK** to print the current tab contents in text format from printer.

11.5 How to Run Instant Test

If the computer where the test item editor is in connects to Chroma 8000, you can test the test items you edit directly in the current editing environment without compiling it to an executable program.

You can select **[Utility] → [Option…]** function to set the UUT basic parameter as Figure 11-26 shows, then click **Execution Control** button on the toolbar for running tests as Figure 11-27 shows.

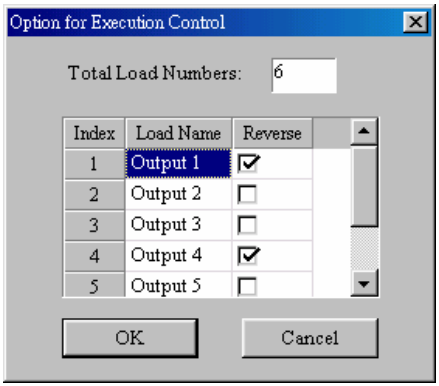


Figure 11-26 Running Environment Setting Dialog Box

Before you switch to running environment for test execution, please make sure that the variables declared in Default column are correctly input in Test Condition and Global tabs as the running environment will read them to become the parameter settings in test commands.

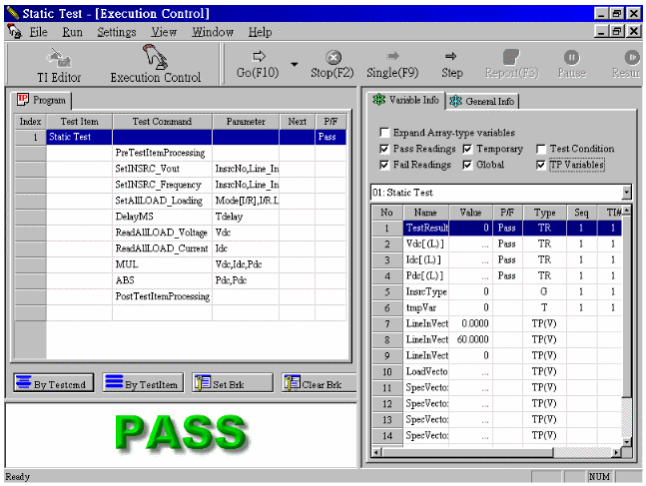


Figure 11-27 Running Environment Detail Test Screen

11.6 Menu Description

[Test Item]→[New]	Add a new test item.
[Test Item]→[Open…]	Open an existing test item.
[Test Item]→[Save]	Save the current edited test item.
[Test Item]→[Save As…]	Save the current edited test item with different name.
[Test Item]→[Print…]	Print directly.
[Test Item]→[Print Preview]	Preview the printout.
[Test Item]→[Print Setup…]	Set the printer.
[Edit]→[Cut]	Cut the data row where the pointer is positioned.
[Edit]→[Copy]	Copy the data row where the pointer is positioned.
[Edit]→[Paste]	Paste the copied data on the row where the pointer is positioned.
[Edit]→[Insert]	Insert a blank data row at the place where the pointer is positioned.
[Edit]→[Delete]	Delete the data row where the pointer is positioned.
[Utility]→[OverAll Check]	Run variable type check.
[Utility]→[Compile]	Run internal compiling.

[Utility]→[Option…]	Set the parameters for running environment.
[Utility]→[Redundant Var. Check]	Check the variable that never been used.
[Utility]→[Test Command Check]	Check if the name of test command is legal.
[Utility]→[Local Var. Rename…]	Rename the local variable name in test item. This function is only valid when clicked 'Call Name' column.
[Utility]→[Parameter Find…]	Find a parameter in 'Test Procedure' tab. This function is only valid in 'Test Procedure' tab.
[Utility]→[Find Next]	Find the next matched parameter in 'Test Procedure' tab. This function is only valid in 'Test Procedure' tab.
[View]→[Toolbar]	Display/hide toolbar.
[View]→[Status Bar]	Display/hide status bar.
[Window]→[Cascade]	Arrange the current opened windows to appear in serial.
[Window]→[Tile]	Arrange the current opened windows to appear in parallel.
[Window]→[Arrange Icons]	Arrange the current icons.
[Help]→[Contents]	Display the table of contents for the online documentation.
[Help]→[About]	Display the version information of this program.
[Exit]	End the program and return to SMPS ATS software main menu.

12. Statistics Process Control (Option)

Statistics Process Control function is able to analyze the logged UUT test result. The main function contains Process Capability Analysis, Xbar&R Chart, Xbar&S Chart, Pareto Chart, np Chart, p Chart, c Chart and u Chart eight types in total. This function can save the various charts to graphic Bitmap File.

In addition to the statistics process control function, it also provides the function to export result contents to an Excel or text file so that you can send the logged test result to other tool program for use.

12.1 Open Statistics Log File

In SMPS ATS software main menu click **Statistics** option to show the 'Statistics' window as Figure 12-1.

There are two tabs in Statistics. The first tab is "Data Source Setting" to let you set the start and end date you want to set for statistics. Detail descriptions please see section 12.2. The second tab "Constraint Setting" is for you to define the constraint conditions to filter out the test data. Details please refer to section 12.3.

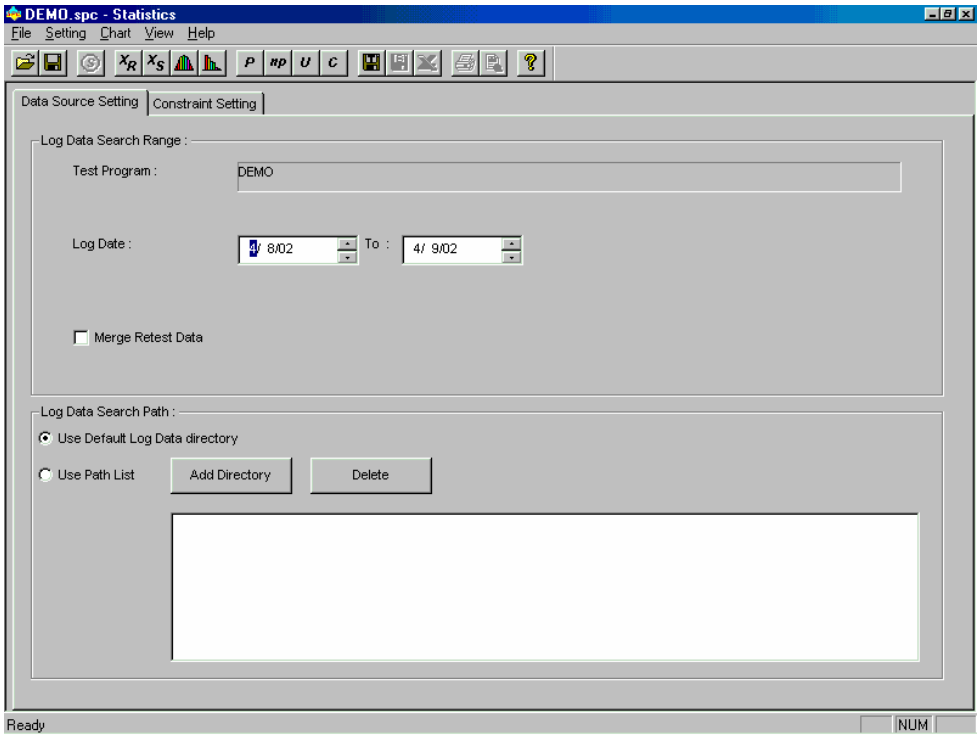


Figure 12-1 Statistics Window

Before doing statistics analysis, you need to open the statistics log file (*.spc). Click **Open** to select an exist statistics log file as Figure 12-2 shows (the default directory is \Spc under the installed directory.) Figure 12-2 will appear the test program name specified in statistics log file when you select it.

You can start to select the statistics data source after opening the statistics log file. Please see section 12.2 for detail description.

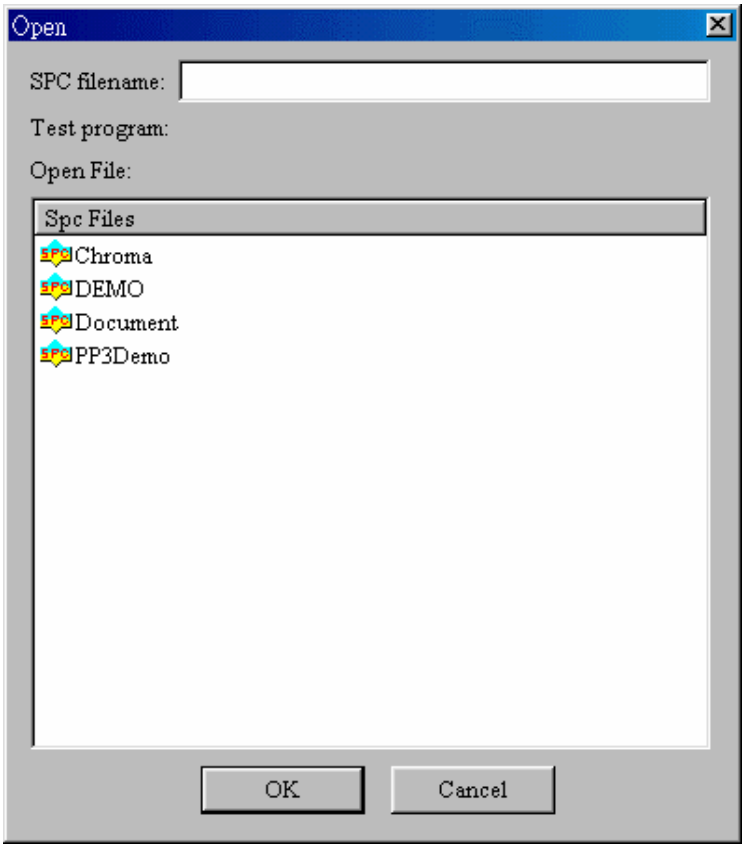


Figure 12-2 Opening a Statistics Log File

12.2 Selecting Statistics Data Source

Use 'Data Source Setting' tab to select statistics data source. The test program name logged in statistics log file will appear in the Test Program column. Then set the starting and ending dates in the **Log Data** column in Figure 12-3 to select the test data between this time period.

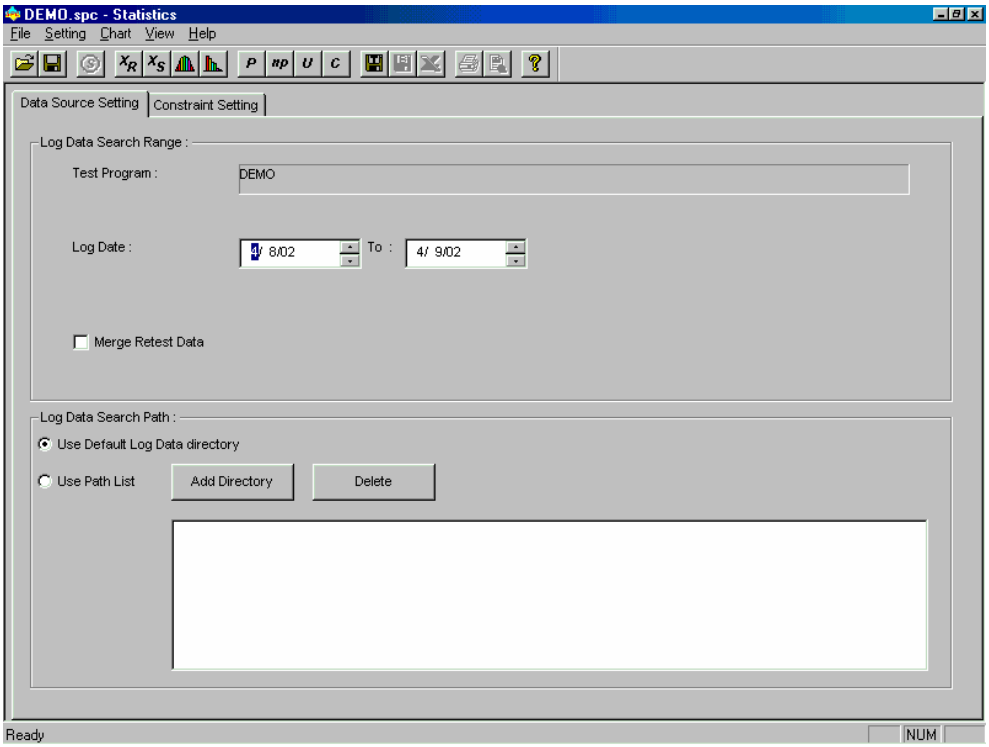


Figure 12-3 Setting Start and End Date of Statistics Data

Next, set the **Log Data Search Path**. Select **Use Default Log Data Directory** or **Use Path List** to search the test result data in the specified directories. It can combine the test data from two or more PowerPro III test platforms for statistics process chart creation. Meanwhile, if there is any retest data to replace the original data, the **Merge Retest Data** box needs to be selected.

- **Use Default Log Data Directory** Use system default test result logged directory.
- **Use Path List** Use the user defined directory group.

Add Directory Add user defined directory by selecting the directory. The window lower part will appear the test result log database file in the selected directory as Figure 12-4 shows.

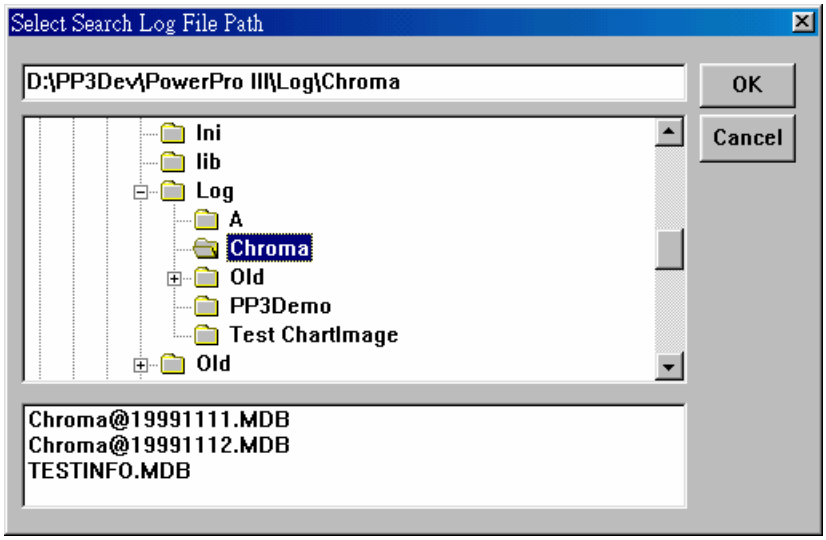


Figure 12-4 Adding User Defined Directory

Delete Delete the user-defined directory where the pointer is positioned.

Notice:

- For Merge Retest Data, the same serial number will be treated as retest data.
- When uses Merge Retest Data, you must check if the retest data uses the same test program, otherwise errors may occur.
- The UUT test date is based on the date that the test data is selected.

The guidelines for replacing original data with retested data:

If a UUT's Serial No. is found in the retest data, the original test data will be replaced with retest data and the rest will remain the same. In addition, if constraints are set for filtering the test data, both original and retested data need to be filtered. The data passed will be displayed for statistics analysis use.

- Set the statistics data start and end date format to be *YYYY*/*MM*/*DD*
  YYYY : Western calendar year, ex. 2000.
  MM : Month, ex. 05, which is May. (Range: 1~12)
  DD : Date, ex. 25. (Range: 1~31)
  So the date format is 2000/05/25.
  Use the up and down arrow keys to change the date. Please be noted that the start date needs to be earlier than end date.

12.3 Setting Constraints for Filtering Test Data

Selecting Constraint Setting tab to set constraints for filtering the test data. This tab has SerialNo Constraint and Variable Constraint two parts. The settings are the same except SerialNo is fixed with the parameter "SerialNo", while the parameter for Variable is a drop-down menu. The drop-down menu for Variable provides the filter condition parameters. The OP provides operands (=, <>, <, >, >=, <=) for selection, while the Value is for condition value setting. Click **Add** after finished entering these three constraints can convert them to database inquiry conditions and list them as below. On the contrary, click **Delete** button can delete the selected database inquiry condition from the list as Figure 12-5 shows.

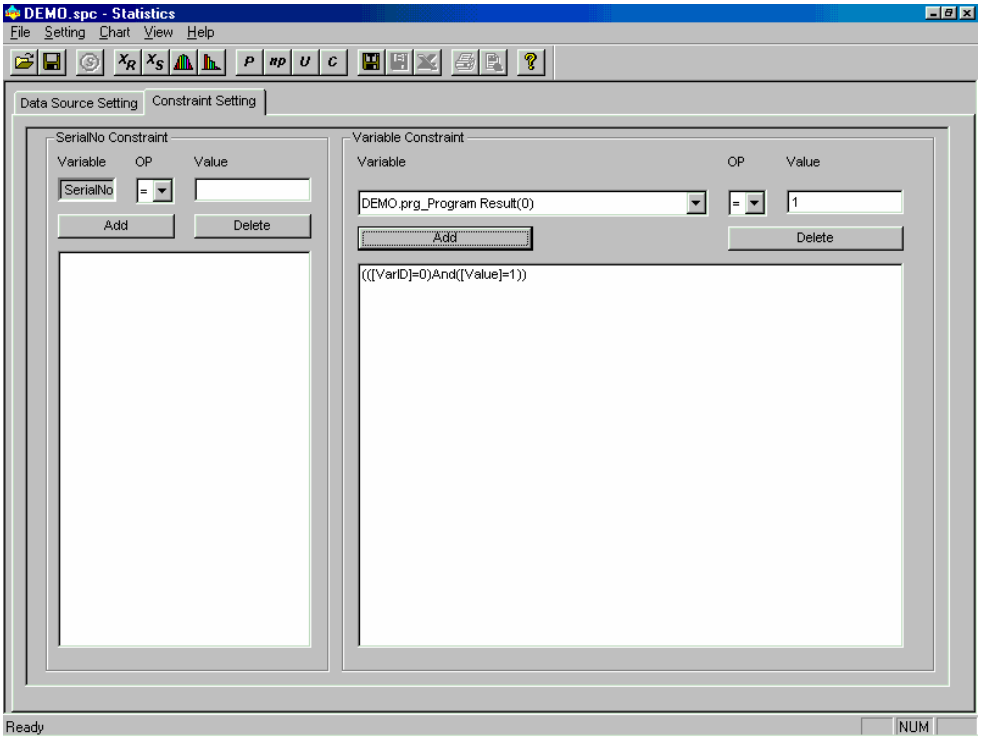


Figure 12-5 Setting Constraint Condition to Filter Out Test Data

After setting the statistics data source and constraint for filtering, you can start to retrieve the test data for analysis. The usage of various charts is introduced below.

12.4 Process Capability Analysis

Click  **(Process Capability Analysis)** to display the screen as Figure 12-6 shows. SPC Log Setting filters all result variables to the left. The right side displays the value of the selected variable. When you change the left part for different result variable, the right part test value will be updated accordingly. Click **Select Wizard** will prompt a dialog box as Figure 12-7 shows. The required variables can be selected rapidly via the condition setting, and the conditions can be saved to file.

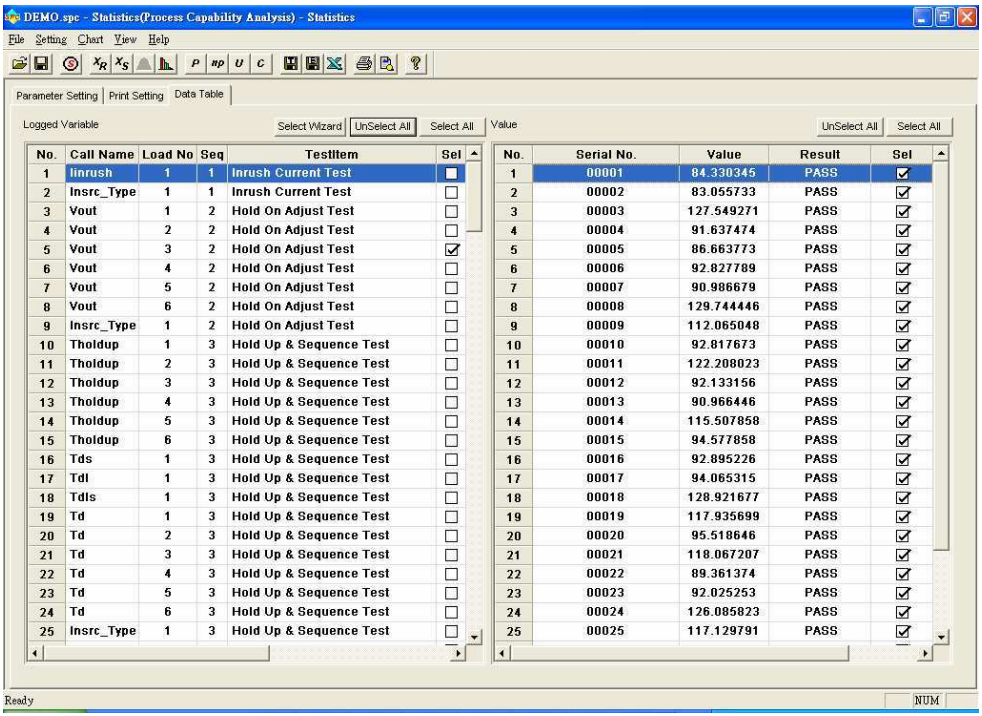


Figure 12-6 Process Capability Analysis Parameter Setting - Data

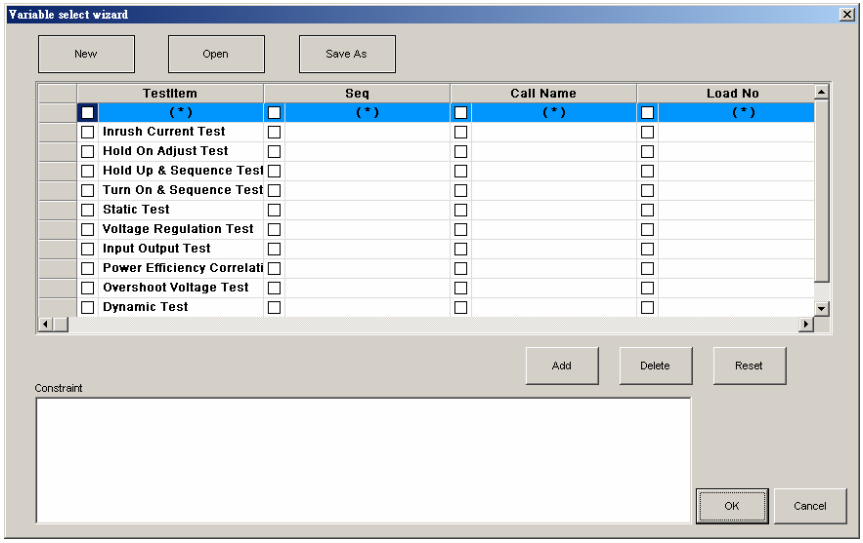


Figure 12-7 Variable Selection Wizard

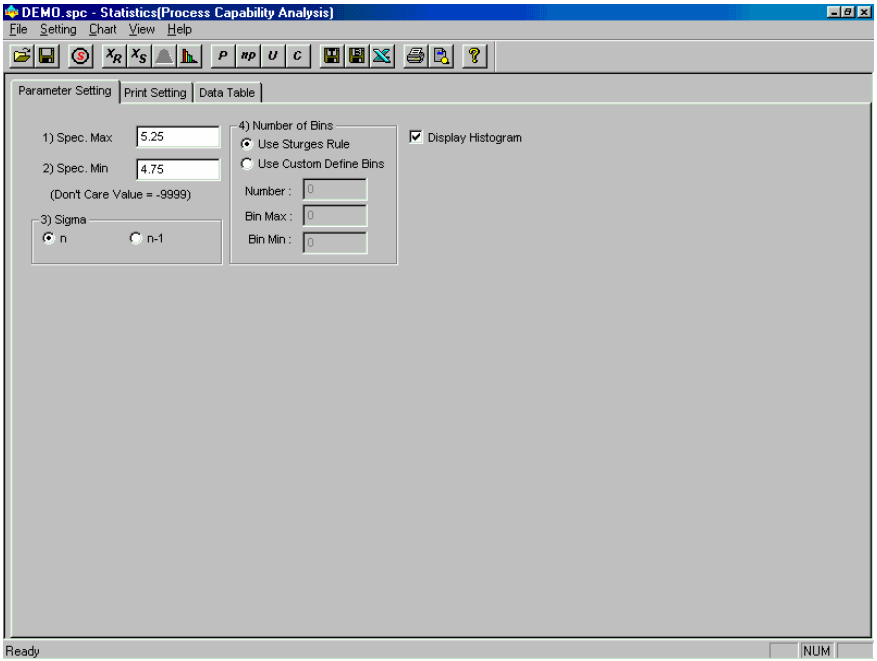


Figure 12-8 Process Capability Analysis Parameter Setting – Statistics

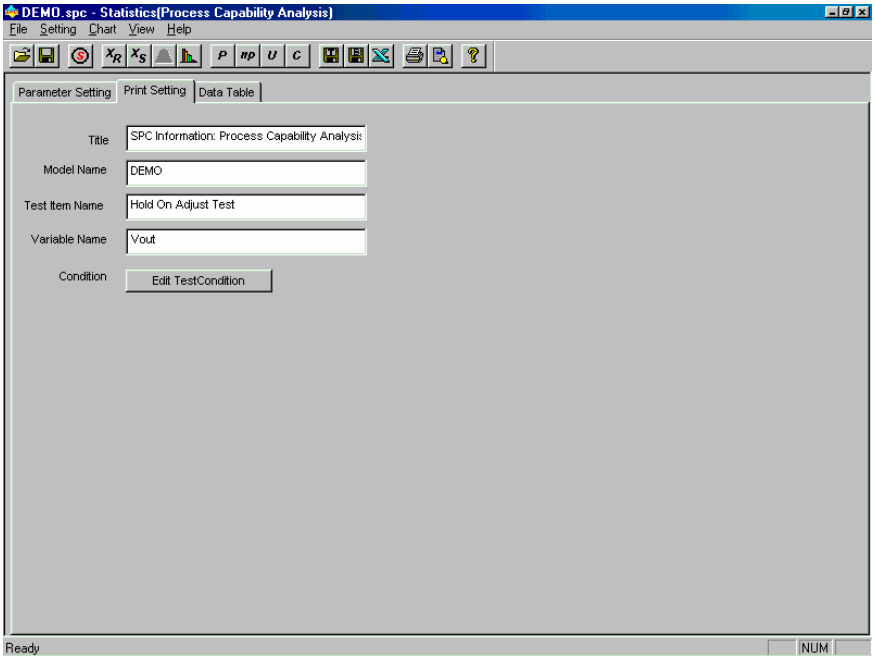


Figure 12-9 Process Capability Analysis Parameter Setting – Print Setting

Logged Variable Table: Figure 12-6 Process Capability Analysis Parameter Setting - Data) Display the related information of reading variable. The important columns are explained as follows.

No.	Reading variable sequential number.
Variable	Reading variable name.
Test Item	Test item name.
Sel	Reading variable check box. The preview or print out of statistics chart will contain this reading variable if selected.
Remark	Reading variable notes.
MaxSpec	The referenced maximum specification variable name for reading variable.
MinSpec	The referenced minimum specification variable name for reading variable.
Variable ID	Reading variable ID.

Notice:

- Sel column check box is able to provide continuous printing function for multiple reading variable statistics charts.

Select All	Select all reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all reading variables. All check boxes will be in unselected mode.

Value Table: Display a certain reading variable of the test result. The important columns are explained as follows.

No.	Test reading sequential number.
Serial No	Serial number for the unit under test (UUT).
Value	Value of test reading.
Result	Test reading PASSES or FAILS.
Sel	Test reading check box. The preview or print out of statistics chart will include this test reading for statistics analysis if selected.
Variable ID	Reading variable ID.

Select All	Select all reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all reading variables. All check boxes will be in unselected mode.

Process Capability Analysis Parameter Setting contains two tabs as below.
'Parameter Setting' tab: (Figure 12-8 Process Capability Analysis Parameter Setting - Statistics)

1. Spec. Max	Set the maximum specification value for selected variable to calculate Cp, Ca and Cpk values.
2. Spec. Min	Set the minimum specification value for selected variable to calculate Cp, Ca and Cpk values.
3. Sigma (Cpk)	Select the way to calculate Sigma. (n: used to calculate the entire mother group; n-1: used to estimate the entire mother group)
4. Number of Bins	Set the bin numbers of a bar chart.
Use Sturges Rule	Get the maximum and minimum value from all readings for bar chart bins and follow the example to count bins. The formula is 1+3.3*log (Size of (X)).
Use Custom Define Bins	The maximum and minimum bin numbers defined by user.
Number	Self defined bin number.
Bin Max	Maximum bin numbers.
Bin Min	Minimum bin numbers.

☐Display Histogram Select if use bar chart.

Notice:

- If Spec. Max and Spec. Min are not defined, this program will retrieve the maximum and minimum value from all reading variables to fill in these two columns.
- For One Side Limit chart analysis, you need to enter –9999 to Spec. Max and Spec. Min columns if no maximum or minimum specification for system to create One Side Limit chart analysis.
- It won't be able to calculate or create chart if the Sigma in selected data is near to 0.

'Print Setting' tab: As Figure 12-9 Process Capability Analysis Parameter Setting – Print Setting shows, only Title and Condition can be set. The rest columns are not available for setting and will print out along with the chart.

Title	Set the title for printing. You can enter any title name.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name for Test Item. This column is for display only. It cannot be modified.
Variable Name	Name for variable. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-10 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description for this column.

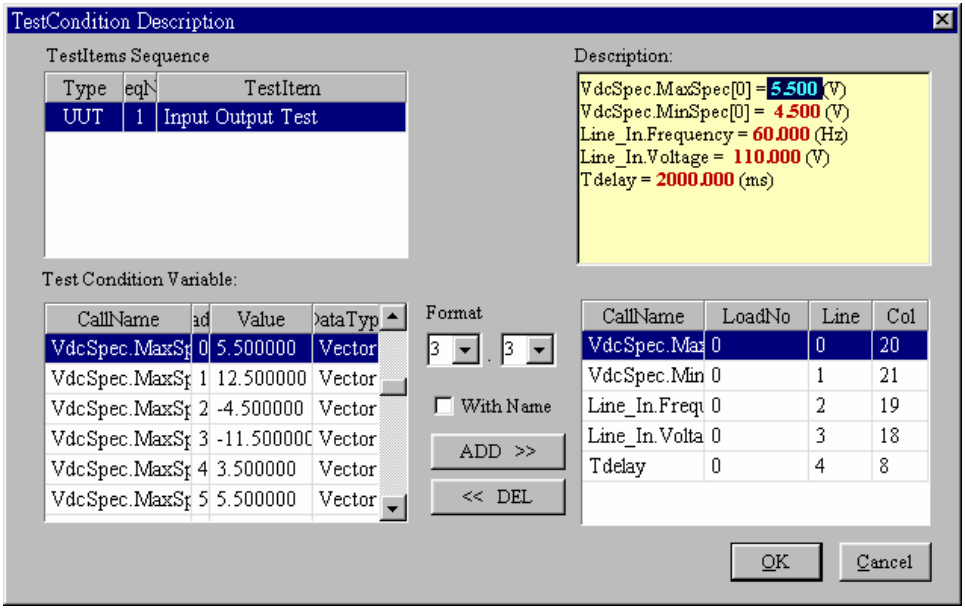


Figure 12-10 Editing Test Condition Setting

Selectable test items are listed at the upper left. In Process Capability Analysis Chart you only need to select the test item that current reading variable is at. The lower left window displays all test condition variables for the above test items. The upper right of the window is the editing area where the red numbers are the variables selected from left. The lower right of the window shows the variables selected.

Displaying Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings at right to be calculated. Last set 'Parameter Setting' and 'Print Setting' tabs and click **Print Preview** button on the toolbar to get the Process Capability Analysis Chart as Figure 12-11.

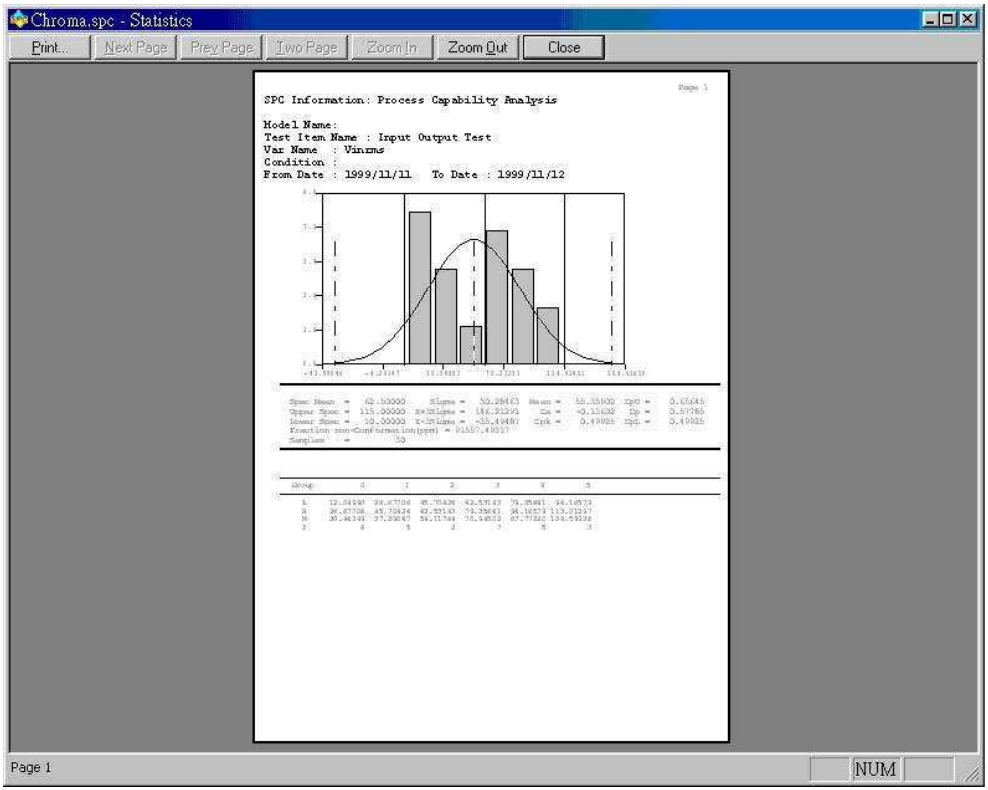


Figure 12-11 Process Capability Analysis Result

The statistics chart result appears in preview format. The upper part shows the UUT basic information in this test item following by the statistics chart. The lower part displays the statistics numbers, and the last shows the bin results. The buttons on the window are explained as follows.

Print	Print the result of this statistics chart.
Next Page	Preview the statistics chart result for the following page.
Prev Page	Preview the statistics chart result for the previous page.
Two Page	Preview the statistics chart by displaying two pages at a time.
Zoom In	Enlarge the preview of current statistics chart.
Zoom Out	Shrink the preview of current statistics chart.
Close	Stop previewing the statistics chart.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click  **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-12 The left part lists the selected variable, which is named in *VariableName_Sequence_LoadNo*. Property setting is at the right to set if the Header, chart, data and size need to be saved as individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system in *_ChartName*, where *ChartName* will change to the variable name at saving. The file type .bmp or .jpg can be selected.

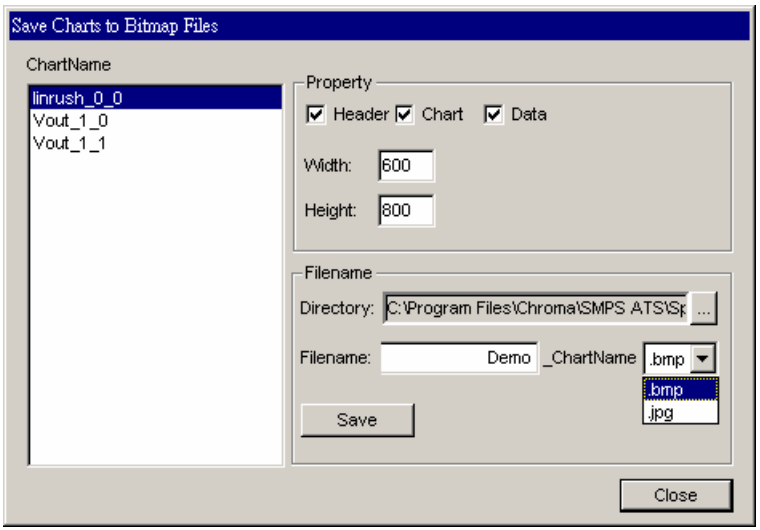


Figure 12-12 Saving Charts to Bitmap Files

Saving Computed Data

Select the variables at left for Statistics Chart creation, and select the test readings at right for computing. Click  **Save Computed Data to Excel File** from the toolbar, it will appear a Transfer Setup dialog box as Figure 12-13 shows and Figure 12-14 to save the computed data.

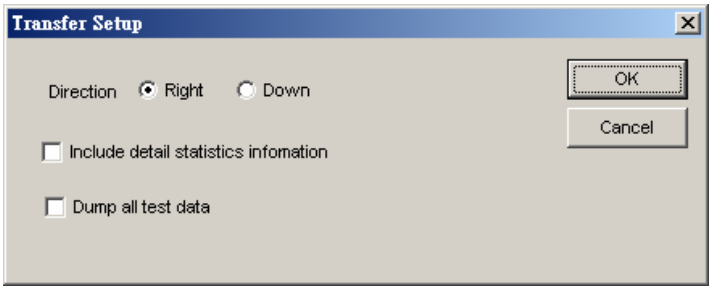


Figure 12-13 Dialog Box of Transfer Setup

Figure 12-14 Saving Computed Data

12.5 Xbar&R Chart

To create Xbar&R Chart, you can click **(Xbar&R)** on the toolbar to display the Statistics Xbar&R Chart Parameter Setting screen as Figure 12-15. The left window shows the variables filtered out by SPC Log Setting function in the test program. The right window displays the test readings of selected variables. When you select different variable at the left, the right side will update with new test readings for this variable. The other two tabs are Xbar&R Chart parameter settings that covered in the following sections.

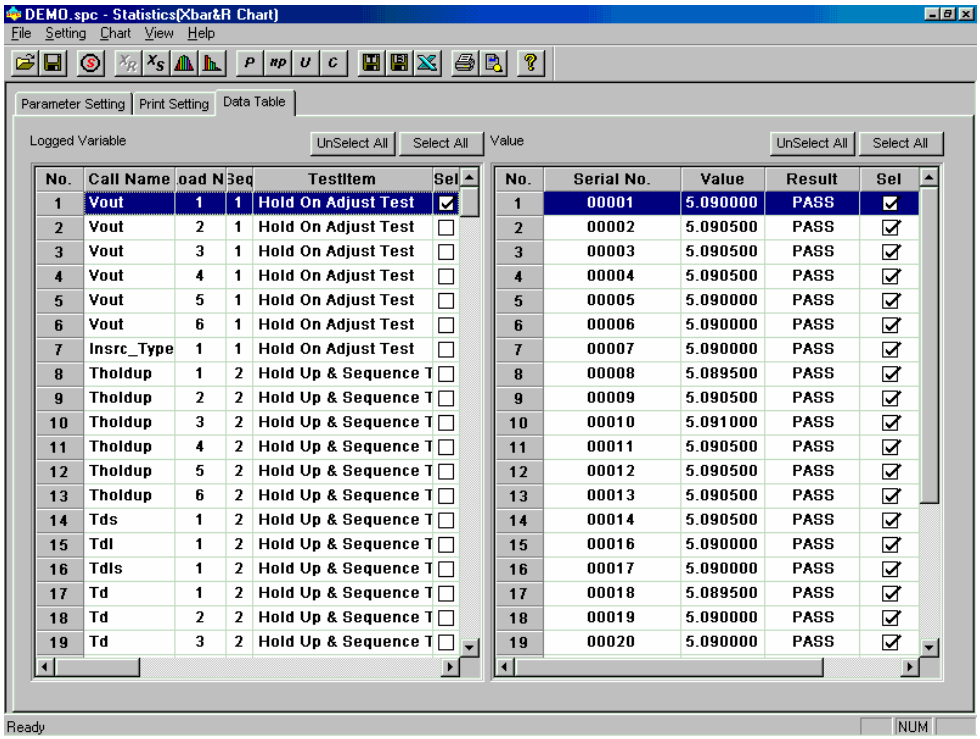


Figure 12-15 Statistics Xbar&R Chart Parameter Setting – Data Table

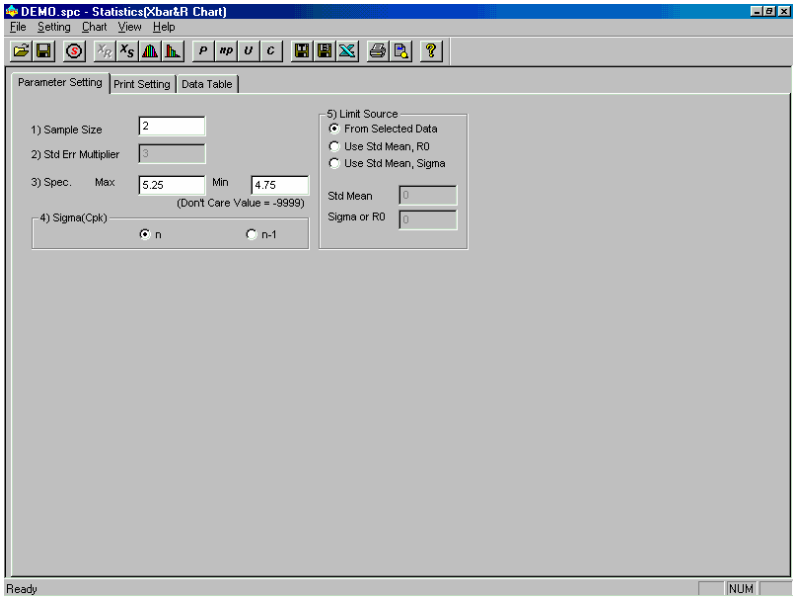


Figure 12-16 Statistics Xbar&R Chart Parameter Setting – Parameter Setting

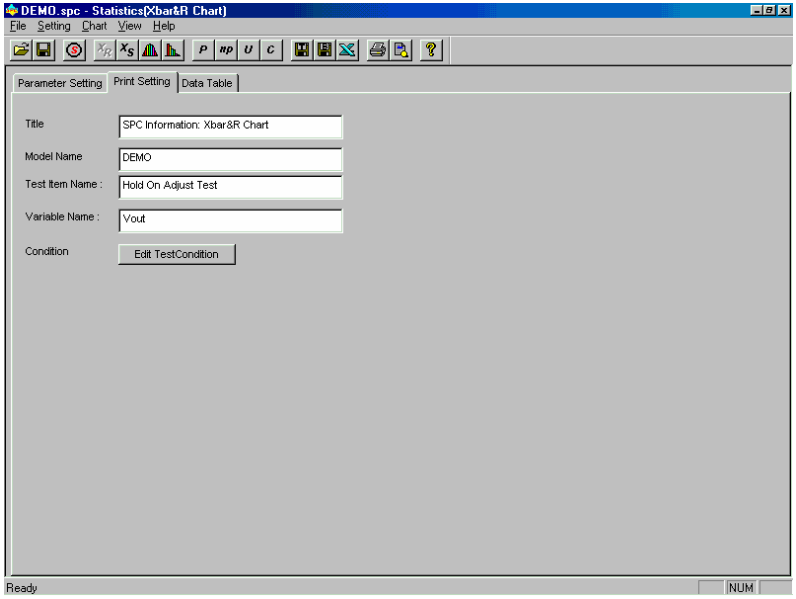


Figure 12-17 Statistics Xbar&R Chart Parameter Setting – Print Setting

Logged Variable Table: (Figure 12-15 Statistics Xbar&R Chart Parameter Setting – Data Table) Display the reading variable related information. The important columns are explained as follows.

No.	Reading variable sequential number.
Variable	Name of reading variable.
Test Item	Name of the test item.
Sel	Reading variable check box. The preview or print out of statistics chart will contain this reading variable if selected.
Remark	Reading variable notes.
MaxSpec	The referenced maximum specification variable name for reading variable.
MinSpec	The referenced minimum specification variable name for reading variable.
Variable ID	Reading variable ID.

Notice:

- Sel column check box is able to provide continuous printing function for multiple reading variable statistics charts.

Select All	Select all reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all reading variables. All check boxes will be in unselected mode.

Value Table: Display a certain reading variable of the test result. The important columns are explained as follows.

No.	Test reading sequential number.
Serial No	Serial number for the unit under test (UUT).
Value	Value of test reading.
Result	Test reading PASSES or FAILS.
Sel	Test reading check box. The preview or print out of statistics chart will include this test reading for statistics analysis if selected.
Variable ID	Reading variable ID.

Select All	Select all test reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all test reading variables. All check boxes will be in unselected mode.

'Parameter Setting' tab: (Figure 12-16 Statistics Xbar&R Chart Parameter Setting – Parameter Setting)

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Spec. Max/Min	Set the value of selected variable maximum and minimum specification for Cp, Ca and Cpk values calculation.
4. Sigma (Cpk)	Select the method to calculate Sigma. (n: used to count the entire mother group; n-1: used to estimate the entire mother group.)
5. Limit Source	Set maximum/minimum limit source.
⊙ *From Selected Data*	Calculate the control line using the selected test readings.
⊙ *Use Std Mean,R0*	Use the Std Mean and R0 as standard value to calculate the control line.
⊙ *Use Std Mean,Sigma*	Use the Std Mean and Sigma as standard value to calculate the control line.
Std Mean	Set standard mean value.
Sigma or R0	Set standard sigma value or standard R0.

Notice:

- Statistics Xbar&R Chart will also count Cp, Ca and Cpk value, thus the Spec. Max/Spec. Min needs to be entered.
- If Spec. Max and Spec. Min are not specified, the program will fill in the column with the maximum/minimum value read from the variable readings.
- For One Side Limit chart, you need to enter –9999 to Spec. Max and Spec. Min columns if no maximum or minimum specification for system to create One Side Limit chart analysis.
- It won't be able to calculate or create chart if the Sigma in selected data is near to 0.

'Print Setting' tab: (Figure 12-17 Statistics Xbar&R Chart Parameter Setting – Print Setting)

Title	Set the title for printing. You can enter any title name.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name for Test Item. This column is for display only. It cannot be modified.
Variable Name	Name for variable. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-10 will appear after you clicked **Edit Condition**

to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings at right to be calculated. Last set 'Parameter Setting' and 'Print Setting' tabs, and click Figure 12-18.

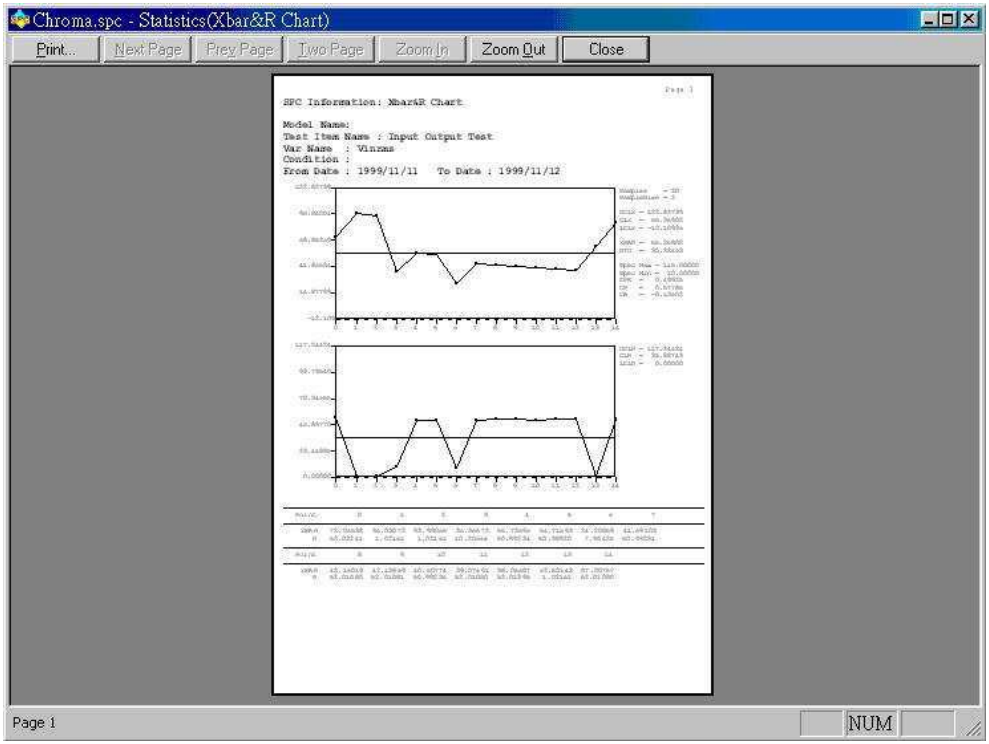


Figure 12-18 Statistics Xbar&R Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The right part displays the statistics numbers, and the bottom displays the result value of each point.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click  **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-19. The left portion lists the selected variable, which is named in *VariableName_Sequence_LoadNo*. Property setting at the right is to set if the Header, chart, data and size need to be saved as individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system in *_ChartName*, where *ChartName* will change to the variable name at saving. File type .bmp or .jpg can be selected.

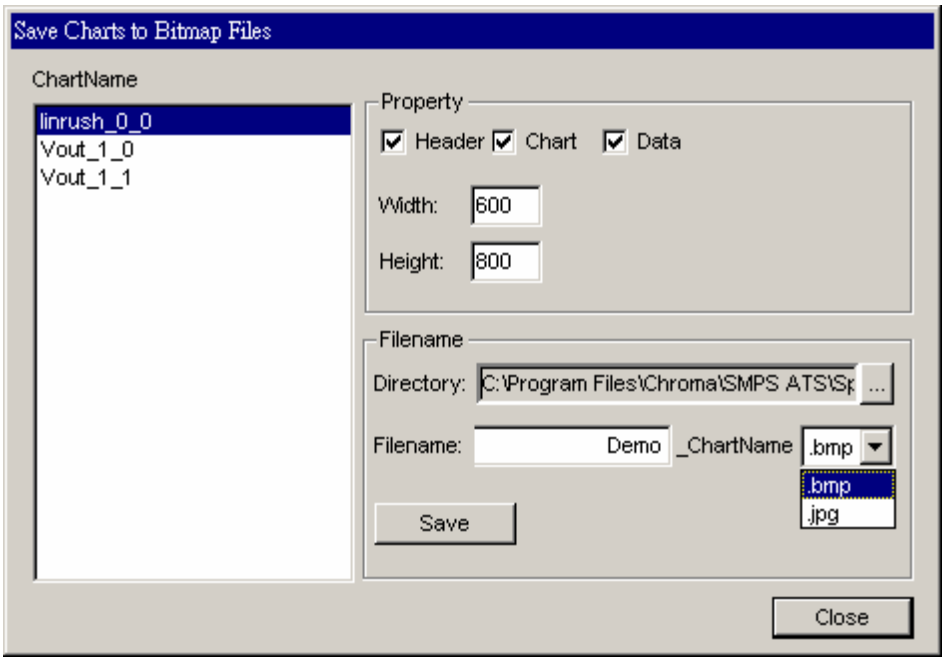


Figure 12-19 Saving Charts to Bitmap Files

Saving Computed Data

Select the variables at left for Statistics Chart creation, and select the test readings at right for computing. Click  **Save Computed Data to Excel File** from the toolbar, it will appear dialog box as Figure 12-20 shows.

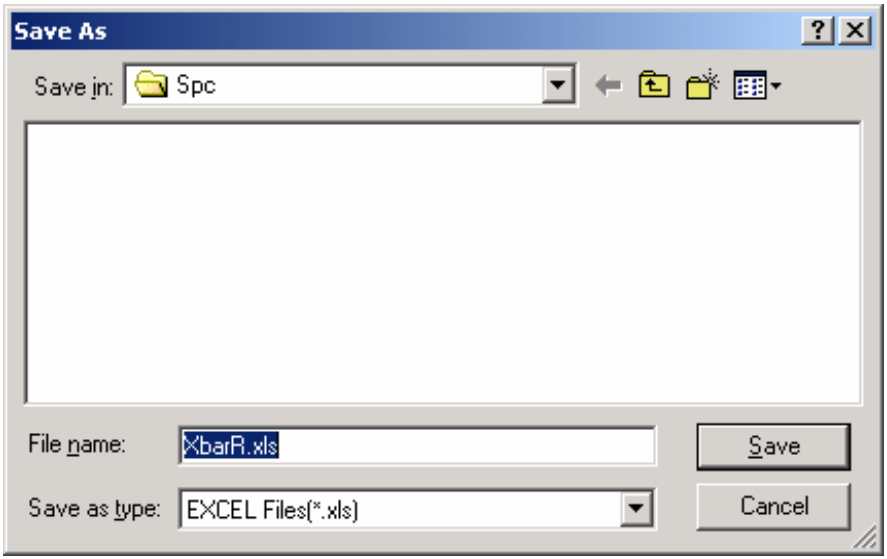


Figure 12-20 Saving Computed Data

12.6 Xbar&S Chart

To create Xbar&S Chart, you can click **(Xbar&S)** on the toolbar to display the Statistics Xbar&S Chart Parameter Setting screen as Figure 12-21. The left part of window shows the variables filtered out by SPC Log Setting function in the test program. The right portion of window displays the test readings of selected variables. When you select different variable at the left, the right side will update with new test readings for this variable. The other two tabs are Xbar&S Chart parameter settings that are covered in the following sections.

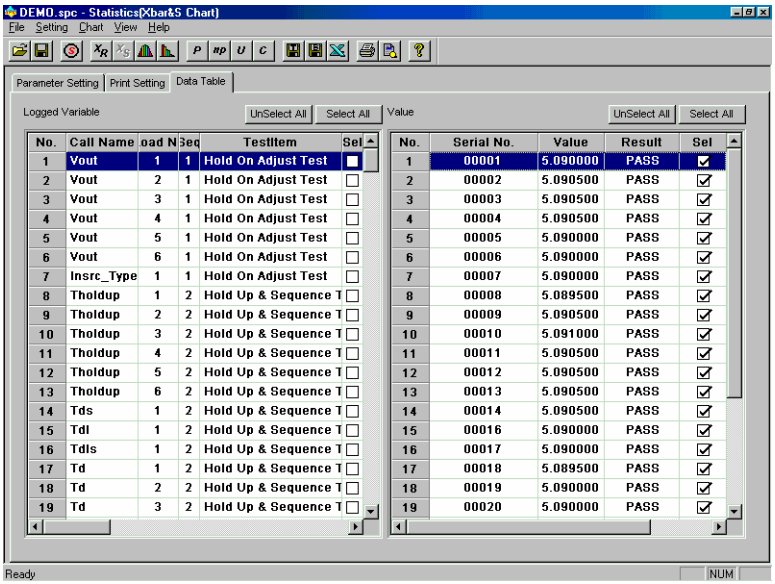


Figure 12-21 Statistics Xbar&S Chart Parameter Setting - Data Table

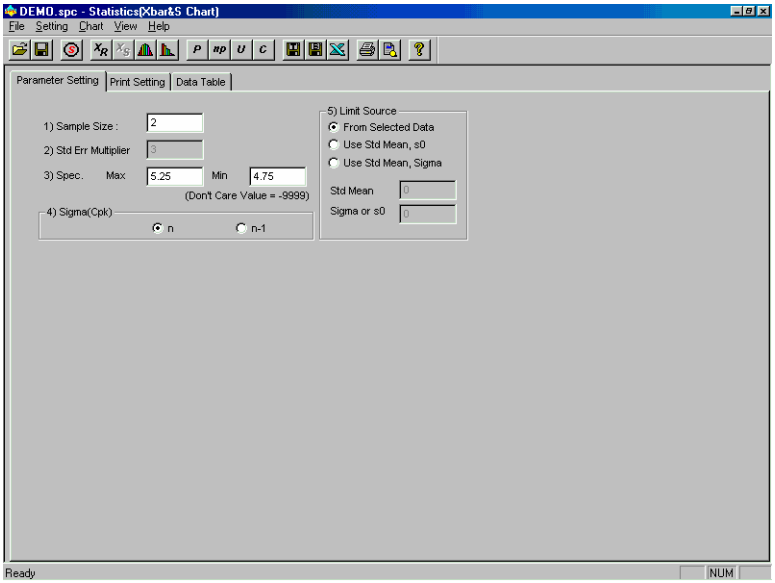


Figure 12-22 Statistics Xbar&S Chart Parameter Setting – Parameter Setting

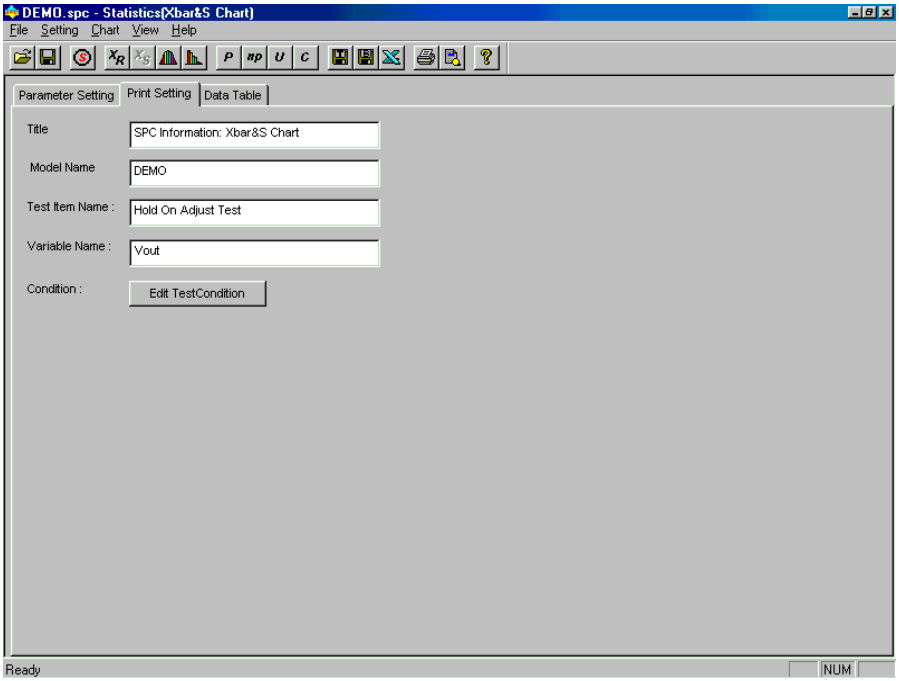


Figure 12-23 Statistics Xbar&S Chart Parameter Setting – Print Setting

Logged Variable Table: (Figure 12-21) Display the reading variable related information. The important columns are explained as follows.

No.	Reading variable sequential number.
Variable	Name of reading variable.
Test Item	Name of the test item.
Sel	Reading variable check box. The preview or print out of statistics chart will contain this reading variable if selected.
Remark	Reading variable notes.
MaxSpec	The referenced maximum specification variable name for reading variable.
MinSpec	The reference minimum specification variable name for reading variable.
Variable ID	Reading variable ID.

Notice:

- Sel column check box is able to provide continuous printing function for multiple reading variable statistics charts.

Select All	Select all reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all reading variables. All check boxes will be in unselected mode.

Value Table: Display a certain reading variable of the test result. The important columns are explained as below.

No.	Test reading sequential number.
Serial No	Serial number for the unit under test (UUT).
Value	Value of test reading.
Result	Test reading PASSES or FAILS.
Sel	Test reading check box. The preview or print out of statistics chart will include this test reading for statistics analysis if selected.
Variable ID	Reading variable ID.
Select All	Select all test reading variables. All check boxes will be in selected mode.
UnSelect All	Unselect all test reading variables. All check boxes will be in unselected mode.

'Parameter Setting' tab: (Figure 12-22)

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Spec. Max/Min	Set the value of selected variable maximum and minimum specification for Cp, Ca and Cpk values calculation.
4. Sigma (Cpk)	Select the method to calculate Sigma. (n: used to count the entire mother group; n-1: used to estimate the entire mother group)
5. Limit Source	Set maximum/minimum limit source.
⊙ *From Selected Data*	Calculate the control line using the selected test readings.
⊙ *Use Std Mean,s0*	Use the Std Mean and s0 as standard value to calculate the control line.
⊙ *Use Std Mean,Sigma*	Use the Std Mean and Sigma as standard value to calculate the control line.
Std Mean	Set standard mean value.
Sigma or s0	Set standard sigma value or standard s0.

Notice:

- Statistics Xbar&S Chart will also count Cp, Ca and Cpk value, thus the Spec. Max/Spec. Min needs to be entered.
- If Spec. Max and Spec. Min are not specified, the program will fill in the column with the maximum/minimum value read from the variable readings.
- For One Side Limit chart, you need to enter –9999 to Spec. Max and Spec. Min columns if no maximum or minimum specification for system to create One Side Limit chart analysis.
- It won't be able to calculate or create chart if the Sigma in selected data is near to 0.

'Print Setting' tab: (Figure 12-23)

Title	Set the title for printing. You can enter any title name.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name for Test Item. This column is for display only. It cannot be modified.
Variable Name	Name for variable. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-10 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings at right to be calculated. Last set 'Parameter Setting' and 'Print Setting' tabs, and click  **Print Preview** button on the toolbar to get the Statistics Xbar&S Chart as Figure 12-24.

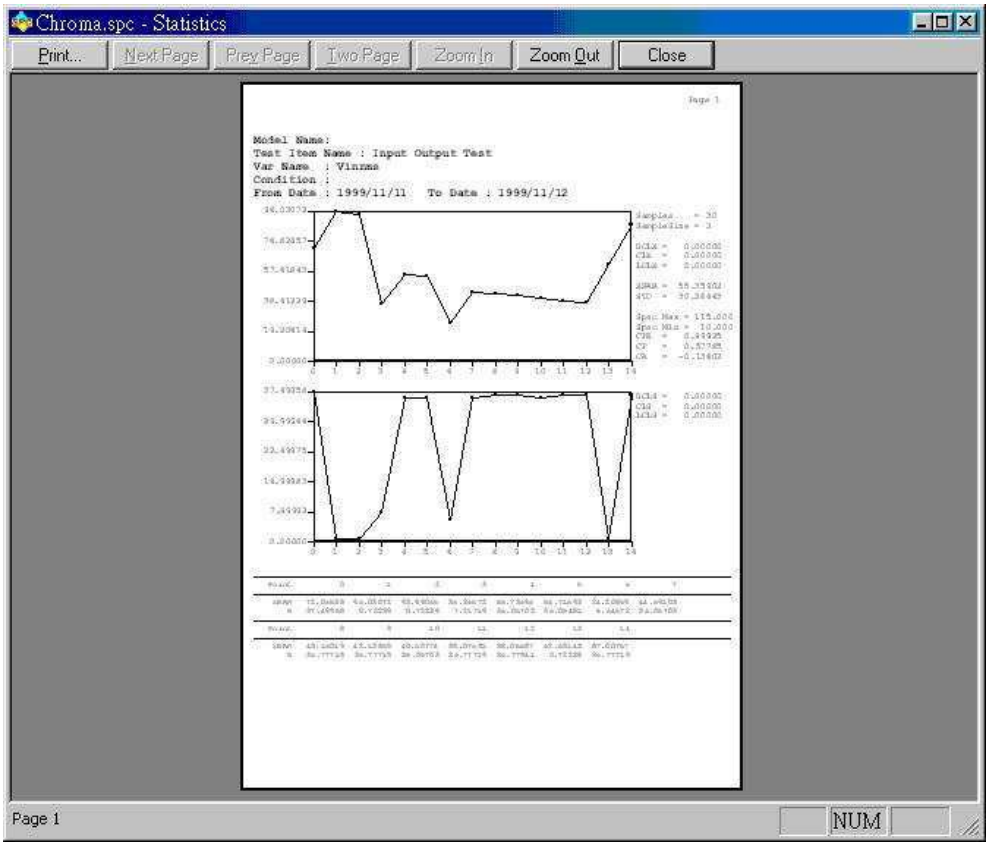


Figure 12-24 Statistic Xbar&S Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The right part displays the statistics numbers, and the bottom displays the result value of each point.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-25. Left part lists the selected variable, which is named in *VariableName_Sequence_LoadNo*. Property setting at the right is to set if the Header, chart, data and size need to be saved as individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename can be user defined or automatically set

by system in *_ChartName*, where *ChartName* will change to the variable name at saving. The file type .bmp or .jpg can be selected.

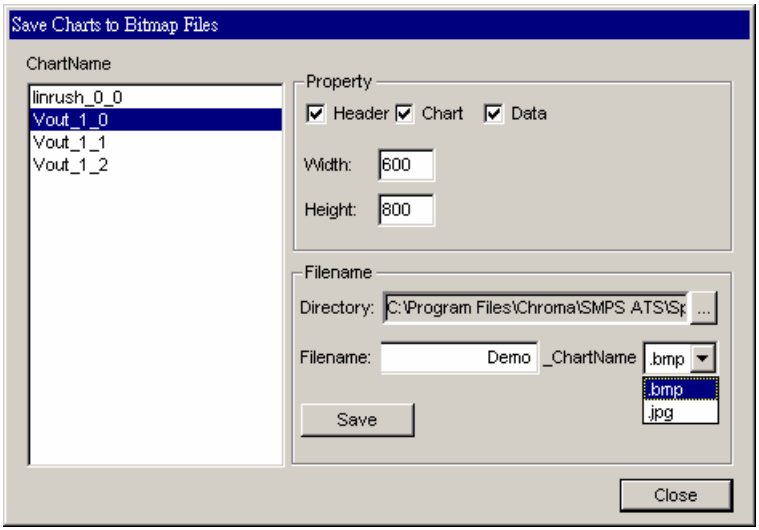


Figure 12-25 Saving Charts to Bitmap Files

Saving Computed Data

Select the variables at left for Statistics Chart creation, and select the test readings at right for computing. Click  **Save Computed Data to Excel File** from the toolbar, it will appear dialog box as Figure 12-26 shows.

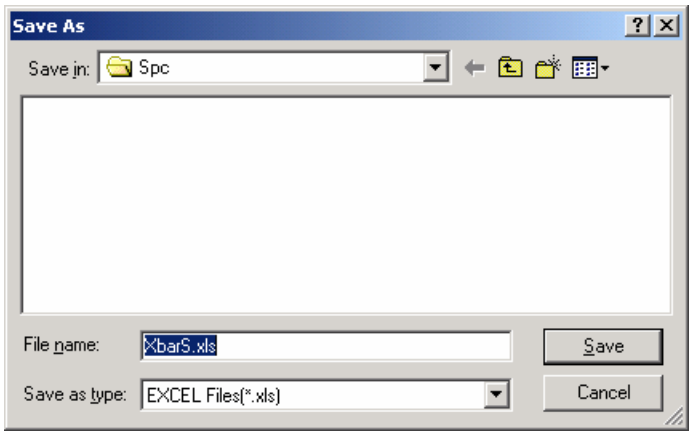


Figure 12-26 Saving Computed Data

12.7 Pareto Chart

This system uses Pareto Chart to calculate the UUT's results and treat the fails during various test sequences as flows.

To create Pareto Chart, click  **(Pareto Chart)** on the toolbar to display the Pareto Chart basic data screen as Figure 12-27. The upper part shows the UUT fail or pass (0 = fail, 1 = pass) result during every test sequence.

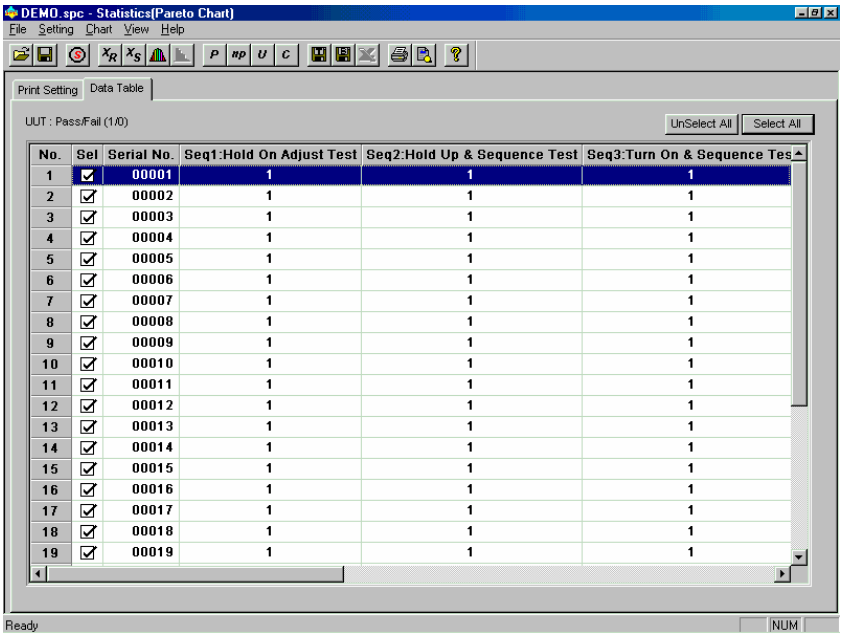


Figure 12-27 Pareto Chart Basic Data Screen – Data Table

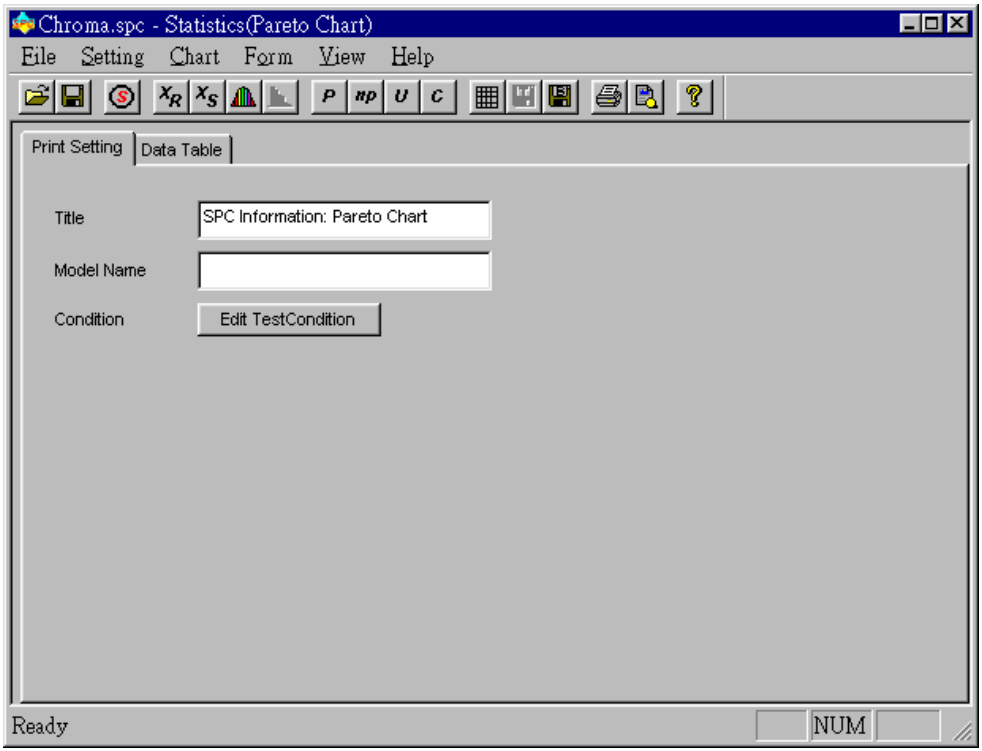


Figure 12-28 Pareto Chart Basic Data Screen – Print Setting

UUT Table: (Figure 12-27) Display UUT related information. The important columns are described as below.

No.	The UUT sequential number.
Sel	UUT test result check box. The preview or print out of statistics chart will contain this reading variable if selected
Serial No.	The UUT serial number.

The rest of columns show the test sequence result pass or fail (1/0).

Select All	Select all UUT test results. All check boxes will be in selected mode.
UnSelect All	Unselect all UUT test results. All check boxes will be in unselected mode.

Print Setting tab: (Figure 12-28)

Title	Set the title for printing. You can enter any title name.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name for Test Item. This column is for display only. It cannot be modified.
Variable Name	Name for variable. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box Figure 12-29 will appear after you clicked **Edit Condition** as to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

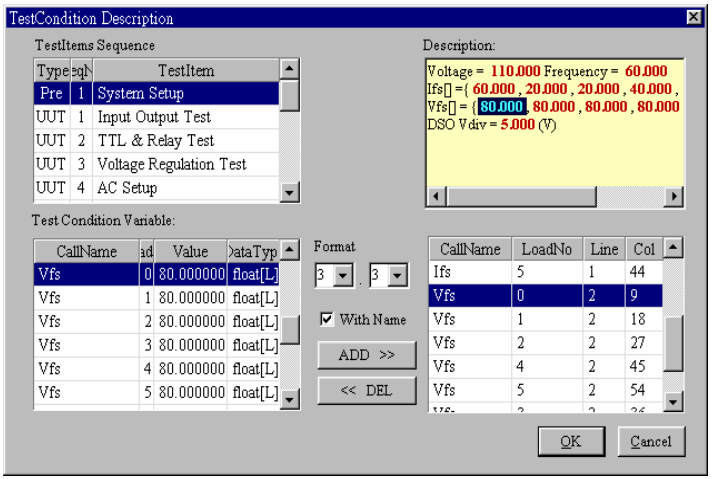


Figure 12-29 Editing Various Test Condition Setting

The upper left part in the window lists test items for selection. You only need to select the test item of current reading variable in process capability analysis chart. The lower left part in the window shows the test condition variables for the above test items. The upper right part of the window is the editing area where the number in red is the variable selected from left. The lower right displays the selected variables.

Displaying Statistics Chart

Select the UUT result that will be analyzed and calculated from the above table, then set **Print Setting** tab, and click **Print Preview** button from the toolbar to get the Pareto Chart as Figure 12-30.

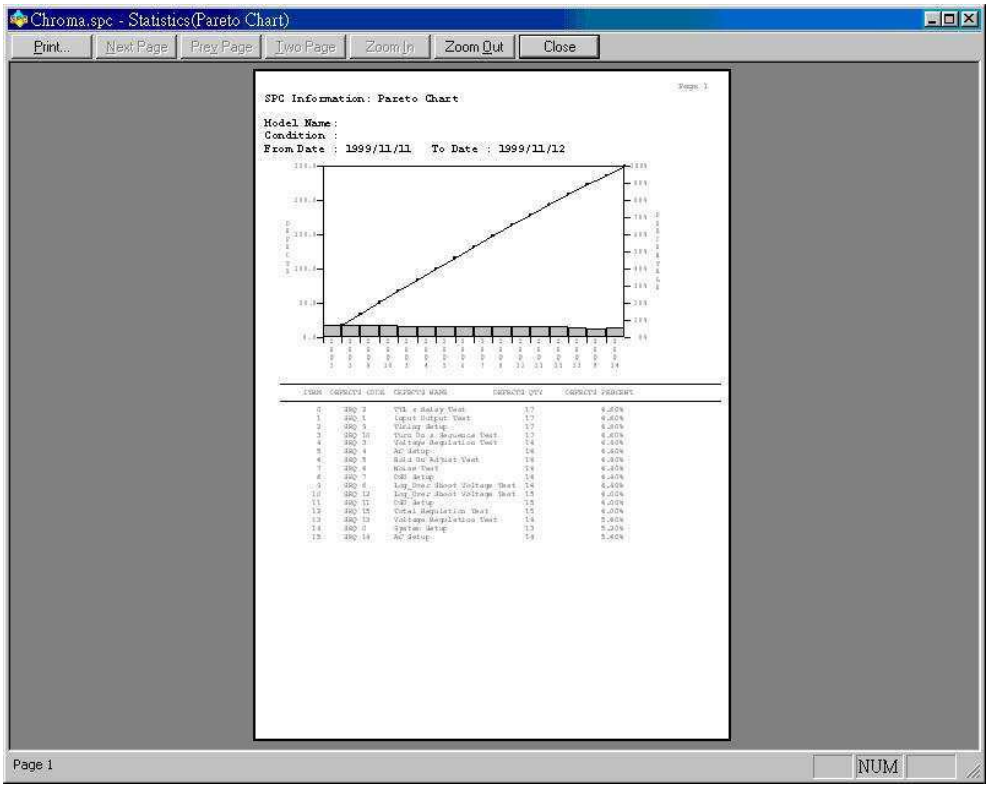


Figure 12-30 Pareto Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The lower part displays the fail quantity and percentage ratio of various test sequences by volume order.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click **Save to Image File** from the toolbar, it will appear

dialog box as Figure 12-31. The figure left part lists the chart name Pareto. Property setting at right is to set if Header, chart, data and size need to be saved in individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system in *_Pareto*. The file type .bmp or .jpg can be selected.

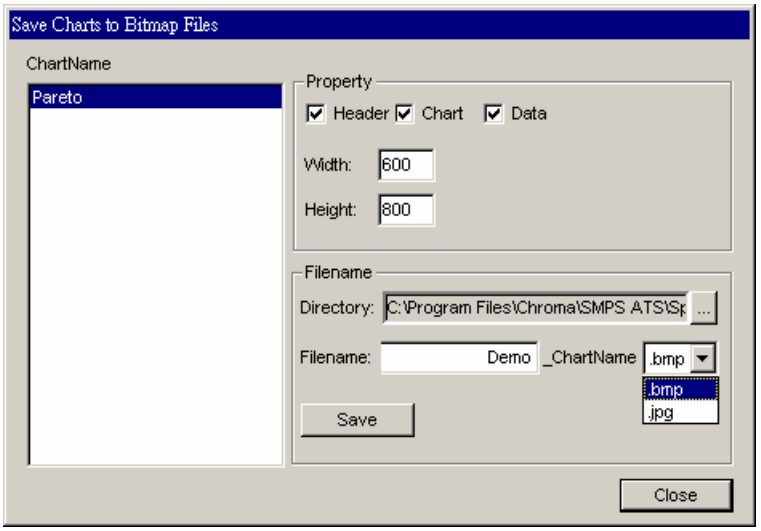


Figure 12-31 Saving Charts to Bitmap Files

12.8 np Chart

The np Chart used in this system is to analyze the test result of every UUT. The failed results are treated as np for np Chart generation.

To create a np Chart, you can click **(np Chart)** on the toolbar to display the np Chart parameter setting screen as Figure 12-32. The top of the table shows the UUT test result while the bottom shows the np Chart parameters as described below.

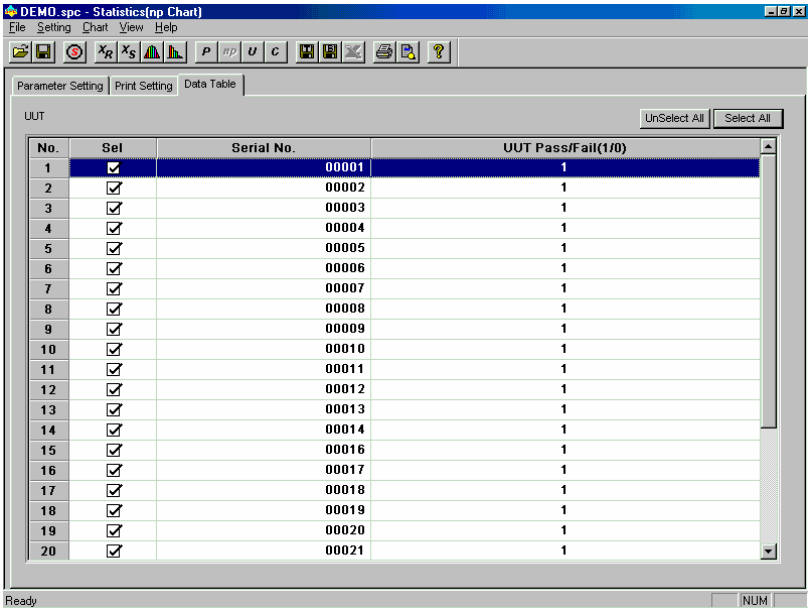


Figure 12-32 np Chart Parameter Setting – Data Table

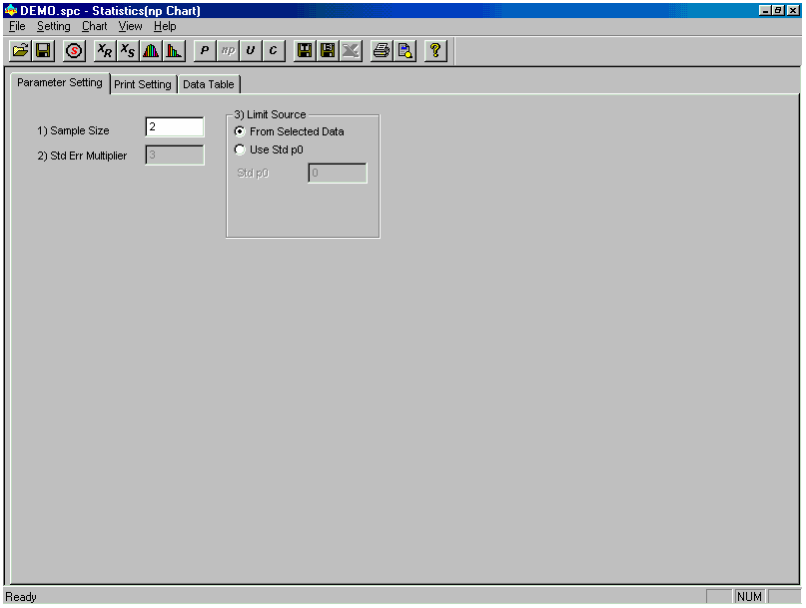


Figure 12-33 np Chart Parameter Setting – Parameter Setting

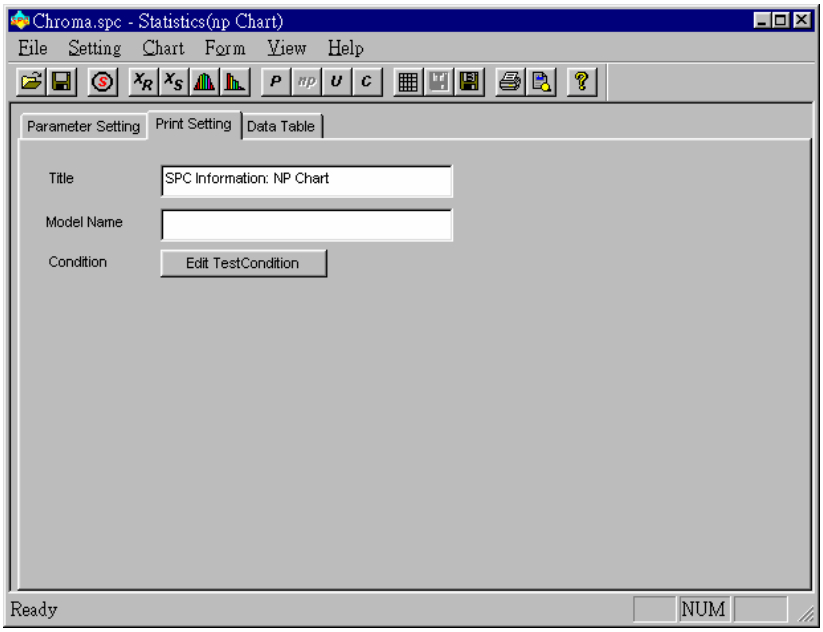


Figure 12-34 np Chart Parameter Setting – Print Setting

UUT Table: (Figure 12-32) Display the UUT related information. The important columns are described as below.

No.	The UUT sequential number.
Sel	UUT test result check box. The preview or print out of statistics chart will contain this reading variable if selected
Serial No.	The UUT serial number.
UUT Pass/Fail (1/0)	Display the UUT test result is passed (1) or failed (0).
Select All	Select all UUT test results. All check boxes will be in selected mode.
UnSelect All	Unselect all UUT test results. All check boxes will be in unselected mode.

'Parameter Setting' tab:

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Limit Source	Set the maximum/minimum limit source.

⊙ *From Selected Data*	Calculate the control line using the selected UUT test result.
⊙ *Use Std p0*	Use the Std p0 as standard value to calculate the control center line.
Std p0	Set standard p0 value using n*p0 as the control center line (n is the sample size).

'Print Setting' tab: (Figure 12-34). Only Title and Condition can be set, the rest of columns are unable to set but will print out with chart.

Title	Set the title for printout.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box Figure 12-29 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

Select the UUT result that will be analyzed and calculated from the above table, then set the Parameter Setting and Print Setting tabs, and click  **Print Preview** button from the toolbar to get the np Chart as Figure 12-35.

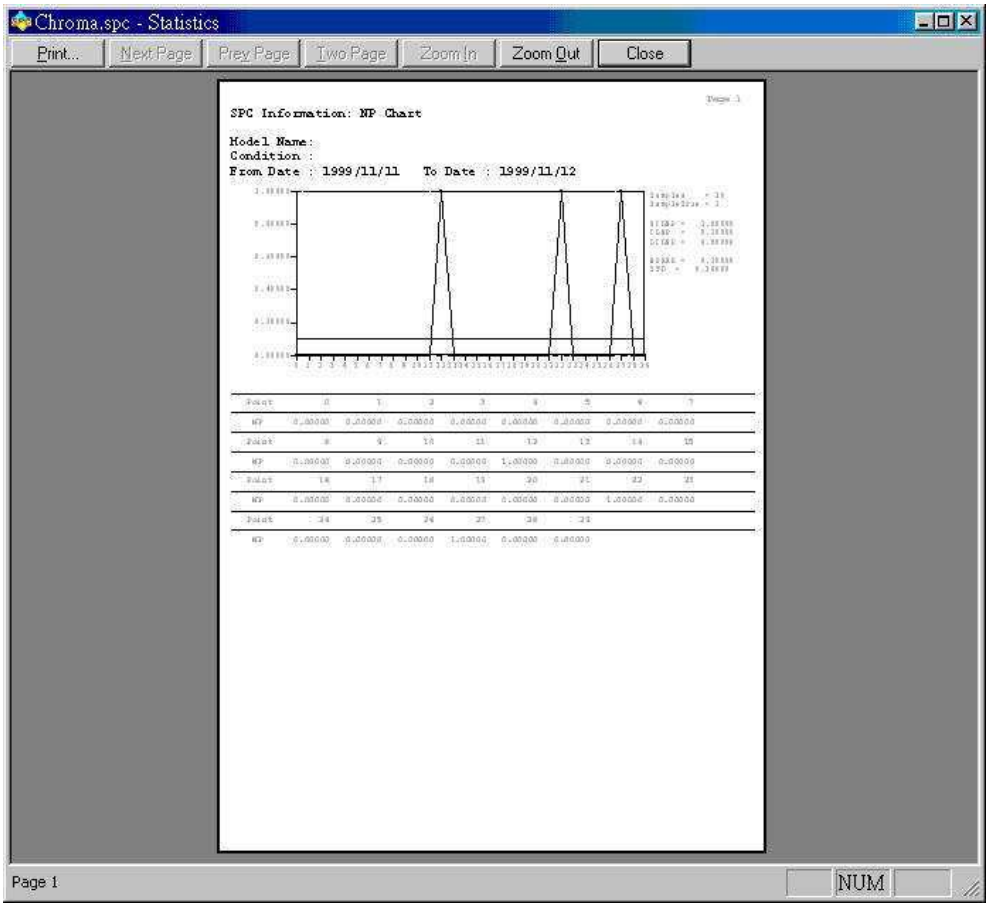


Figure 12-35 np Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The lower part displays the fail quantity and percentage ratio of various test sequences by volume order.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click  **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-36. The figure left part lists the chart name NP Chart. Property setting at right is to set if Header, chart, data and size need to be saved in individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename

can be user defined or automatically set by system in *_NPChart*. The file type .bmp or .jpg can be selected.

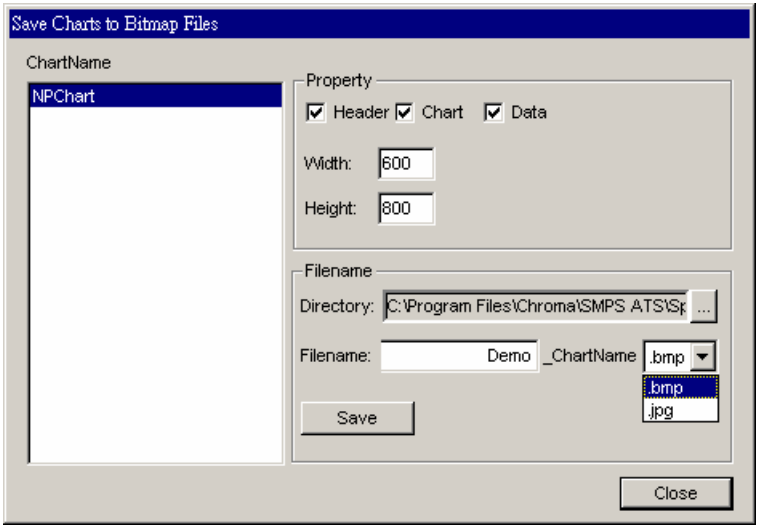


Figure 12-36 Saving Charts to Bitmap Files

12.9 p Chart

The p Chart used in this system is to analyze all UUT test results of everyday. The failed number is calculated as the p rate for p Chart generation.

To create a p Chart, click **(p Chart)** from the toolbar to display the p Chart parameter setting screen as Figure 12-37. The top of the table shows the UUT test result while the bottom shows the p Chart parameters described below.

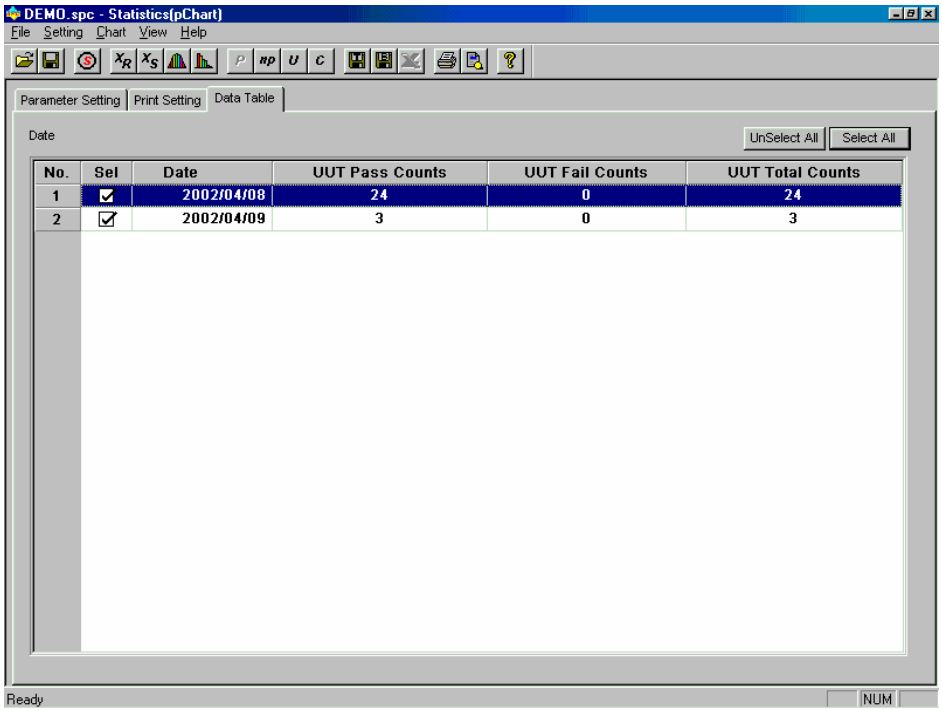


Figure 12-37 p Chart Parameter Setting – Data Table

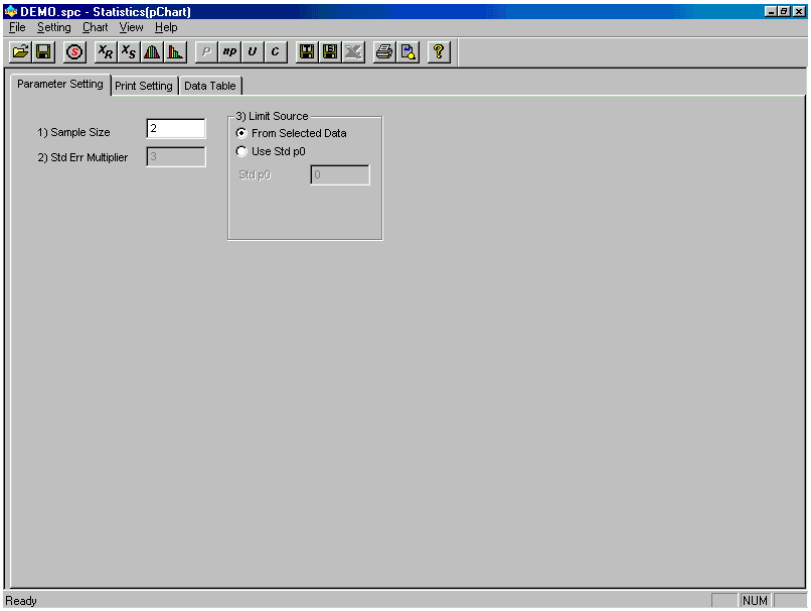


Figure 12-38 p Chart Parameter Setting – Parameter Setting

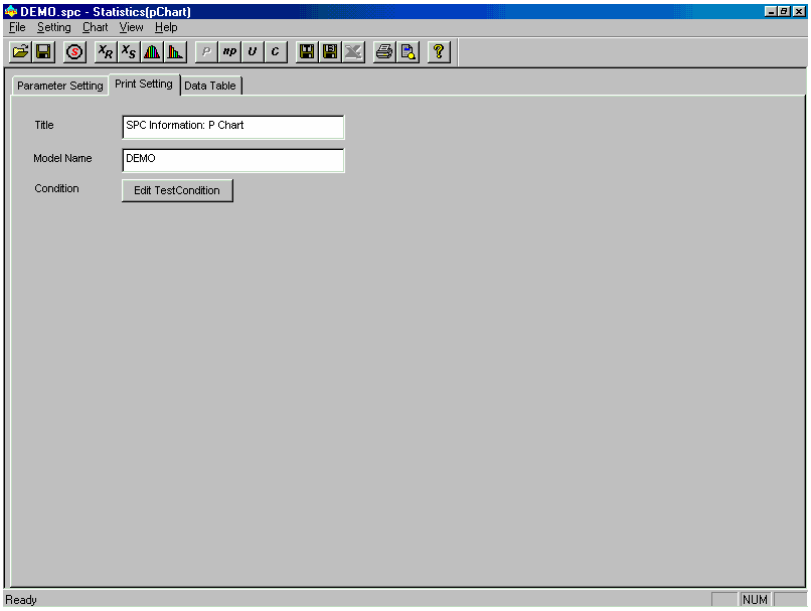


Figure 12-39 p Chart Parameter Setting – Print Setting

Data Table: (Figure 12-37) Displays the UUT related information. The important columns are described as below.

No.	The sequential number by date order.
Sel	The date test result check box. The preview or print out of statistics chart will contain this date test result if selected.
Date	The date of test.
UUT Pass Counts	The pass counts of a certain date's UUT test result.
UUT Fail Counts	The fail counts of a certain date's UUT test result.
UUT Total Counts	The total counts of a certain date's UUT test result.
Select All	Select all UUT test results. All check boxes will be in selected mode.
UnSelect All	Unselect all UUT test results. All check boxes will be in unselected mode.

'Parameter Setting' tab: (Figure 12-38)

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Limit Source	Set the maximum/minimum limit source.
⊙ *From Selected Data*	Calculate the control line using the selected UUT test result.
⊙ *Use Std p0*	Use the Std p0 as standard value to calculate the control center line.
Std p0	Set standard p0 value.

'Print Setting' tab: (Figure 12-39)

Title	Set the title for printout.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-29 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

Select the date of UUT result that will be analyzed and calculated from the above table, then set 'Parameter Setting' and 'Print Setting' tabs, and click **Print Preview** button from the toolbar to get the p Chart as Figure 12-40.

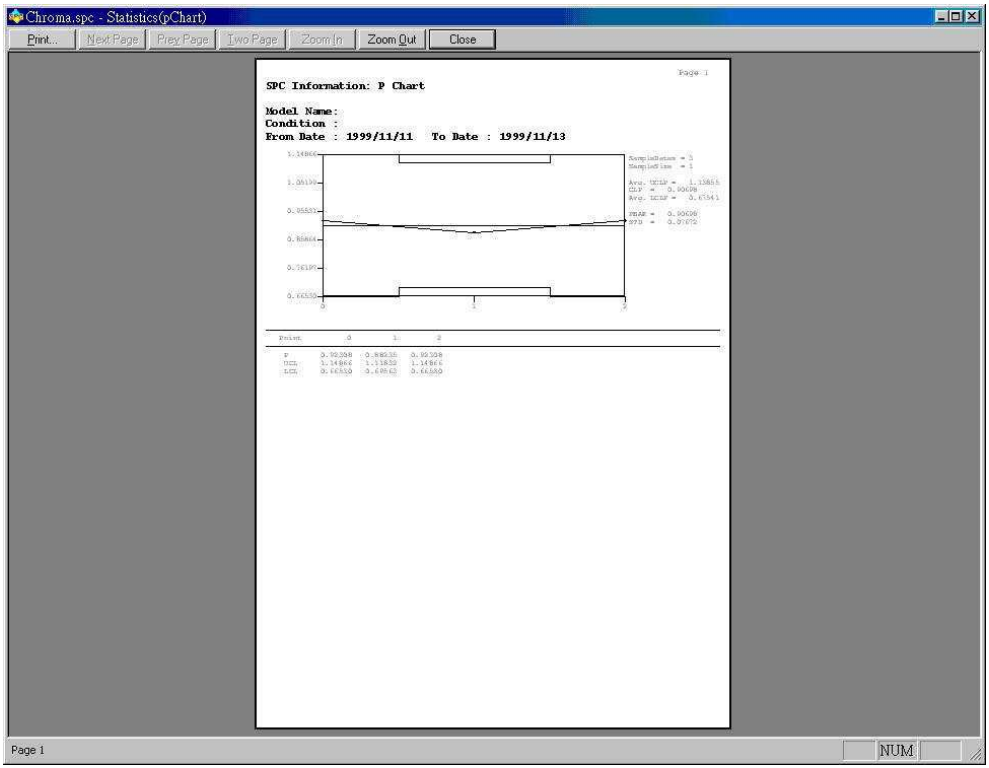


Figure 12-40 p Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The right part displays the statistics numbers, and the bottom displays the result value of each point.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-41. The figure left part lists the chart name P Chart. Property setting

at right is to set if Header, chart, data and size need to be saved in individual bitmap file. The lower right is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system in *_PChart*. The file type .bmp or .jpg can be selected.

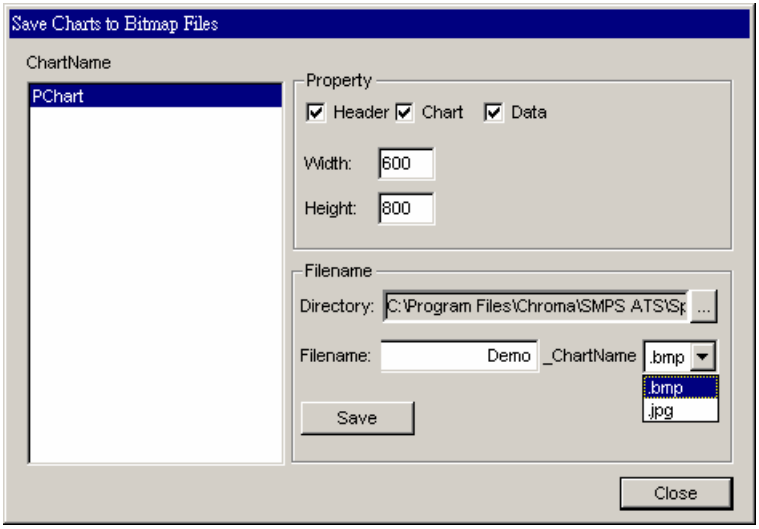


Figure 12-41 Saving Charts to Bitmap Files

12.10 c Chart

The system uses c Chart to analyze and calculate the fail count result by treating the logged test result readings of a UUT under a test item as c.

To create c Chart, click **c** (**c** Chart) on the toolbar to display the c Chart Parameter Setting screen as Figure 12-42. The left window shows the test sequences of the test programs. The right window displays the UUT test readings pass or fail counts of the selected test sequence from the left. The other tabs are settings for c Chart parameters described as follows.

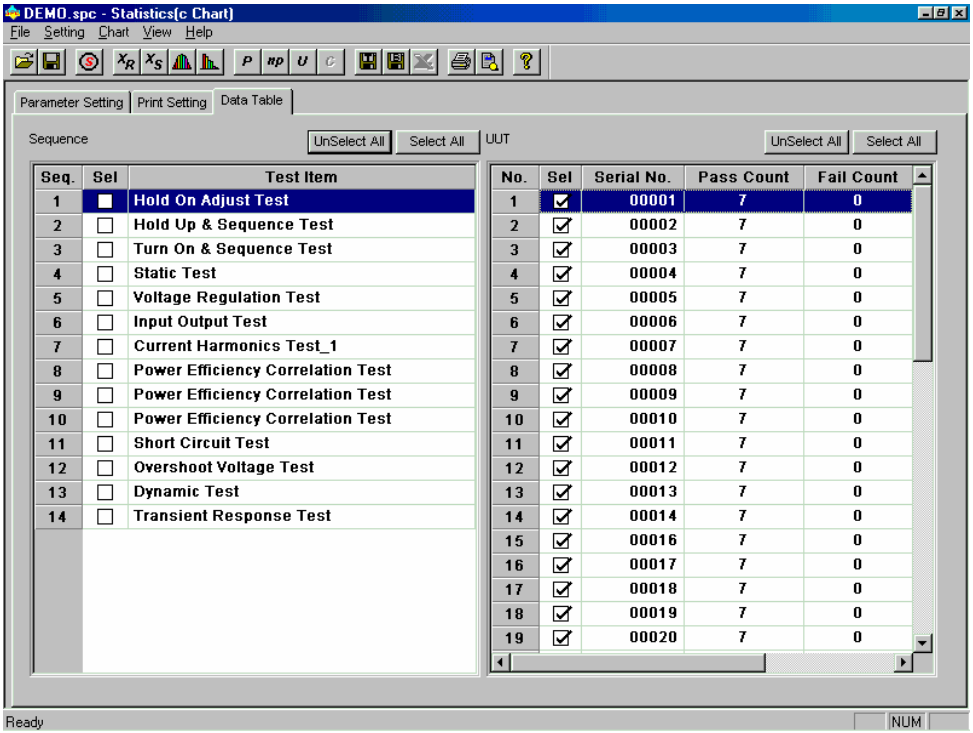


Figure 12-42 c Chart Parameter Setting – Data Table

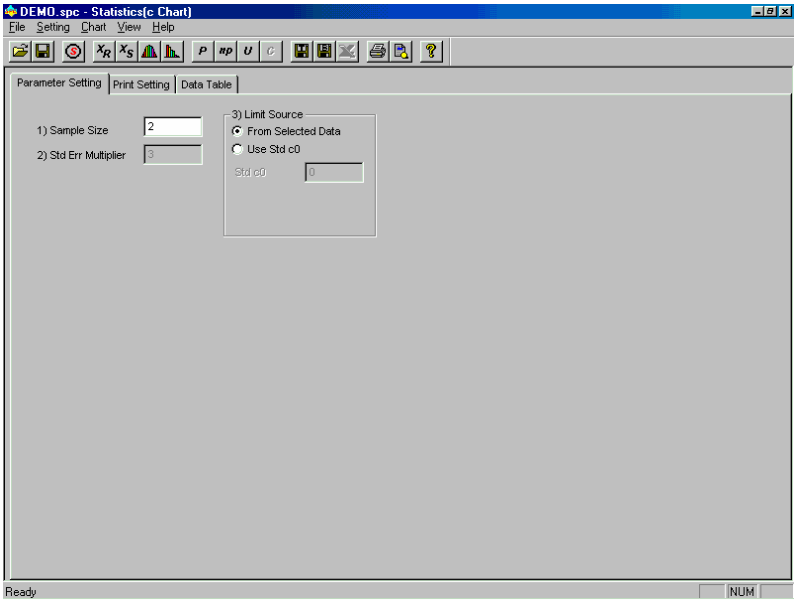


Figure 12-43 c Chart Parameter Setting – Parameter Setting

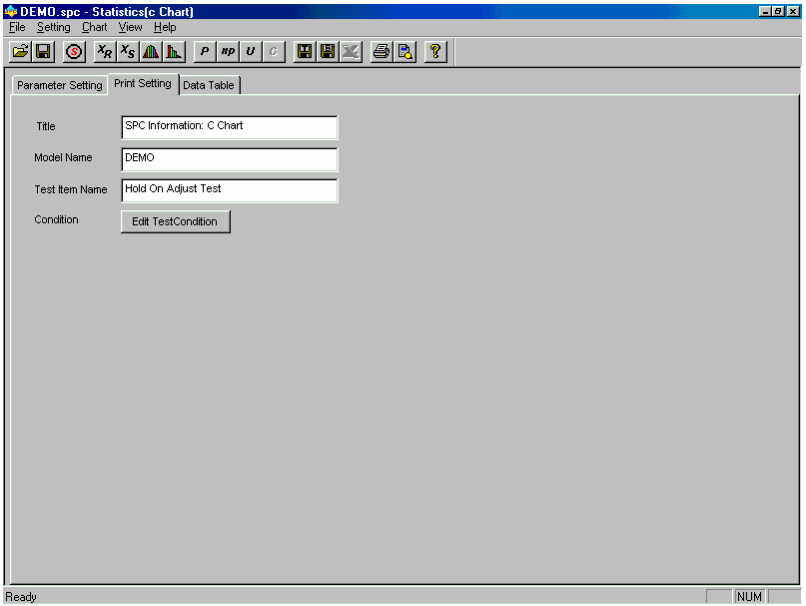


Figure 12-44 c Chart Parameter Setting – Print Setting

Sequence Table: (left window of Figure 12-42) Display test sequences, detail column descriptions are as below.

Seq	Serial number of the test sequences.
Sel	Test sequence check box. The preview or print out of statistics chart will contain the readings if selected.

Notice:

- Sel column check box provides continuous printing function for multiple test sequence c Charts.

Select All	Select all test sequences. All check boxes will be in selected mode.
UnSelect All	Unselect all test sequences. All check boxes will be in unselected mode.

UUT Table: (right window of Figure 12-42) Display the UUT related info. The important columns are explained as follows.

No.	The sequential number of UUT test result.
Sel	The UUT test result check box. The preview or print out of statistics chart will contain the test result if selected.
Serial No.	The serial number of UUT.
Pass Count	The pass counts of all UUT test readings in test sequences.
Fail Count	The fail counts of all UUT test readings in test sequences.
Total Count	The total counts of all UUT test readings in test sequences.
Select All	Select all UUT test results. All check boxes will be in selected mode.
UnSelect All	Unselect all UUT test results. All check boxes will be in unselected mode.

'Parameter Setting' tab: (Figure 12-43)

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Limit Source	Set the maximum/minimum limit source.
⊙ *From Selected Data*	Calculate the control line using the selected UUT test result.
⊙ *Use Std c0*	Use the Std c0 as the standard value to calculate the control center line.
Std c0	Set standard c0 value as the control center line.

'Print Setting' tab: (Figure 12-44)

Title	Set the title for printout.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name of Test Item. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-29 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

Select the date of UUT result that will be analyzed and calculated from the above table, then set 'Parameter Setting' and 'Print Setting' tab, and click **Print Preview** button on the toolbar to get the c Chart as Figure 12-45.

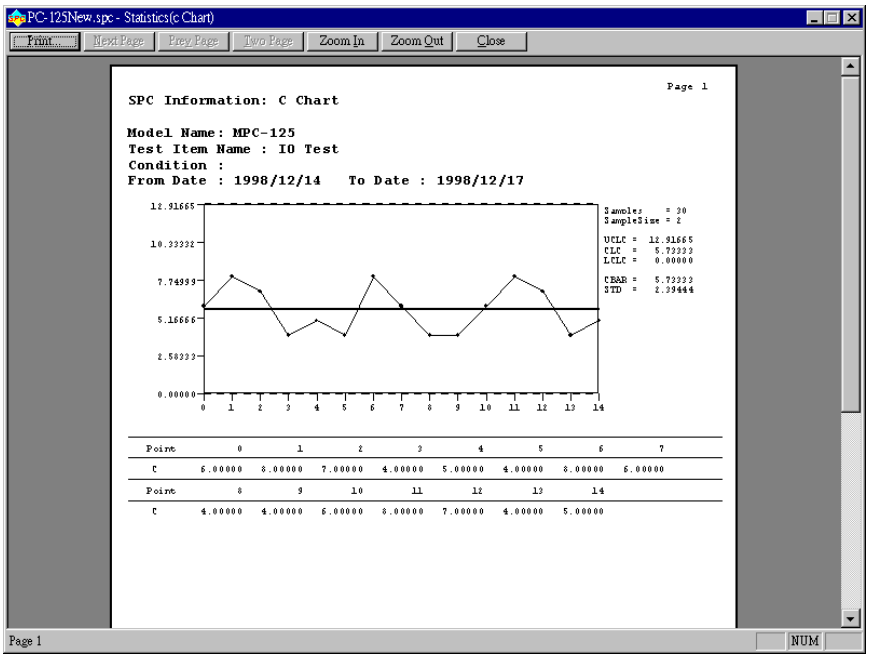


Figure 12-45 c Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The right part displays the statistics numbers, and the bottom displays the result value of each point.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click  **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-46. The figure left part lists the selected variable, which is named in *TestItemName*. Property setting at right is to set if the Header, chart, data and size need to be saved in individual bitmap file. The lower right area is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system in *_ChartName* where *ChartName* will change to the test item name at left window. The file type .bmp or .jpg can be selected.

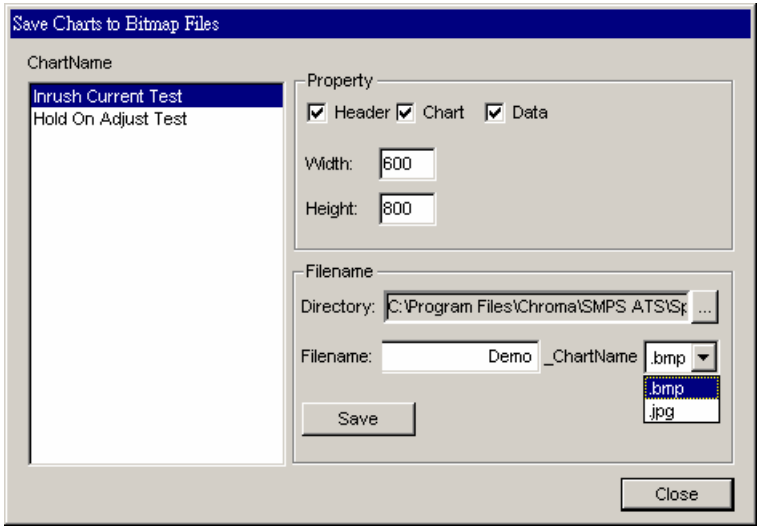


Figure 12-46 Saving Charts to Bitmap Files

12.11 u Chart

The system uses u Chart to analyze and calculate the fail count rate using the logged test result readings of a UUT under a test item everyday to divide it by the readings quantity and come up the u Chart.

To create c Chart, click **(u Chart)** on the toolbar to display the u Chart parameter setting screen as Figure 12-47. The left window shows the test sequences of the test programs. The right window displays the UUT test readings pass or fail counts of the selected test sequence from the left of every test date. The other tabs are settings for u Chart parameters described as follows.

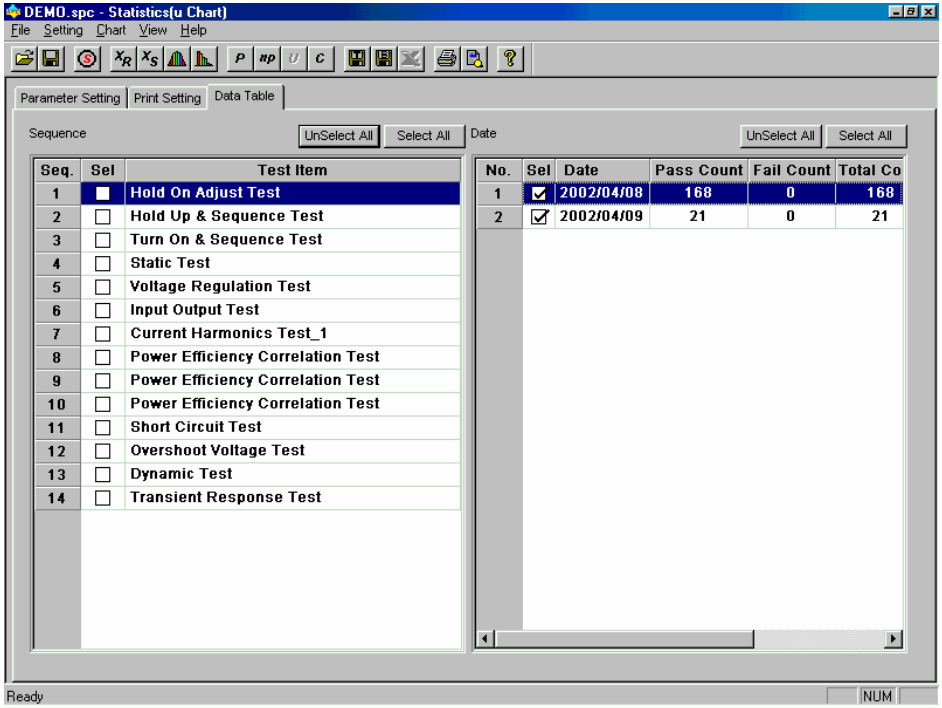


Figure 12-47 u Chart Parameter Setting

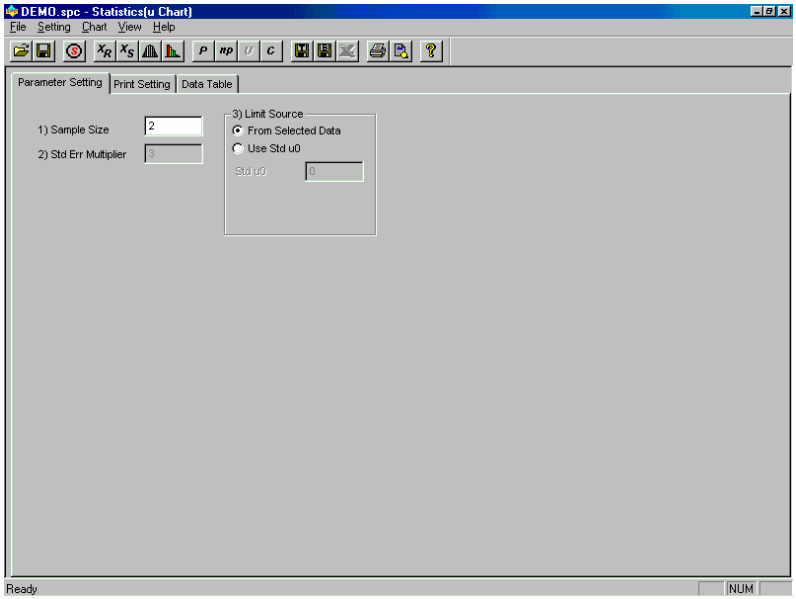


Figure 12-48 u Chart Parameter Setting – Parameter Setting

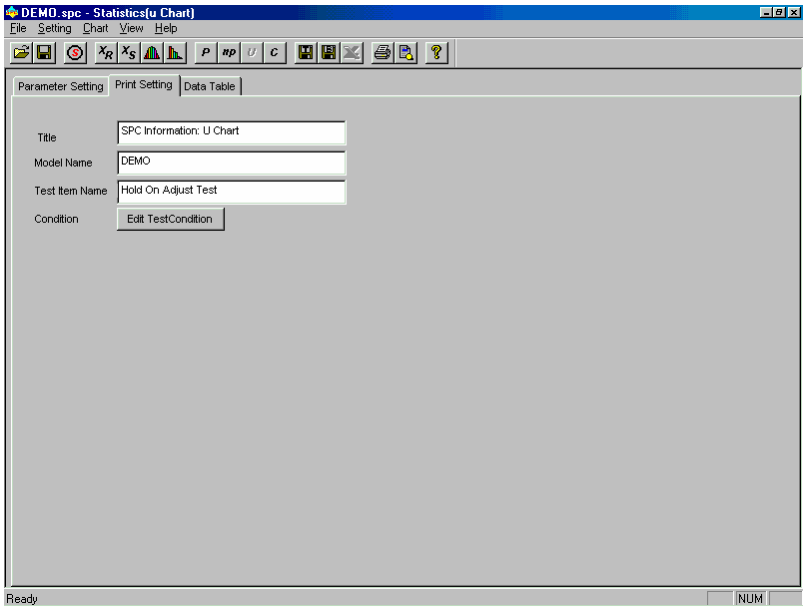


Figure 12-49 u Chart Parameter Setting – Print Setting

Sequence Table: (left window of Figure 12-47) Displays the test sequences, detail columns descriptions are as follows.

Seq	Serial number of test sequences.
Sel	Test sequence check box. The preview or print out of statistics chart will contain the readings if selected.

Notice:

- Sel column check box provides continuous printing function for multiple test sequence u Charts.

Select All	Select all test sequences. All check boxes will be in selected mode.
UnSelect All	Unselect all test sequences. All check boxes will be in unselected mode.

Data Table: (right window of Figure 12-47) Display the UUT related information. The important columns are explained as below.

No.	The sequential number of UUT test result.
Sel	The UUT test result check box. The preview or print out of statistics chart will contain the test result if selected.
Date	The date of test.
UUT Pass Counts	The UUT pass counts of a selected test sequence at a certain date.
UUT Fail Counts	The UUT fail counts of a selected test sequence at a certain date.
UUT Total Counts	The total UUT counts of a selected test sequence at a certain date.
Select All	Select all test date results. All check boxes will be in selected mode.
UnSelect All	Unselect all test date results. All check boxes will be in unselected mode.

'Parameter Setting' tab: (Figure 12-48)

1. Sample Size	Set the sample numbers.
2. Std Err Multiplier	Display the standard error multiplier for Spec. Max/Min.
3. Limit Source	Set the maximum/minimum limit source.
⊙ *From Selected Data*	Calculate the control line using the selected UUT test result.
⊙ *Use Std u0*	Use the Std u0 as the standard value to calculate the control

	center line.
Std u0	Set standard u0 value.

'Print Setting' tab: (Figure 12-49)

Title	Set the title for printout.
Model Name	Model name for UUT. This column is for display only. It cannot be modified.
Test Item Name	Name of Test Item. This column is for display only. It cannot be modified.
Condition	Setting for test condition. You can follow the actual test condition to enter the description. A text dialog box as Figure 12-29 will appear after you clicked **Edit Condition** to let you select suitable Test Condition variable contents from the test programs and create the description of this column.

Displaying Statistics Chart

Select the test date of test item that will be analyzed and calculated from the above table, then set 'Parameter Setting' and 'Print Setting' tabs, and click **Print Preview** button on the toolbar to get the u Chart as Figure 12-50.

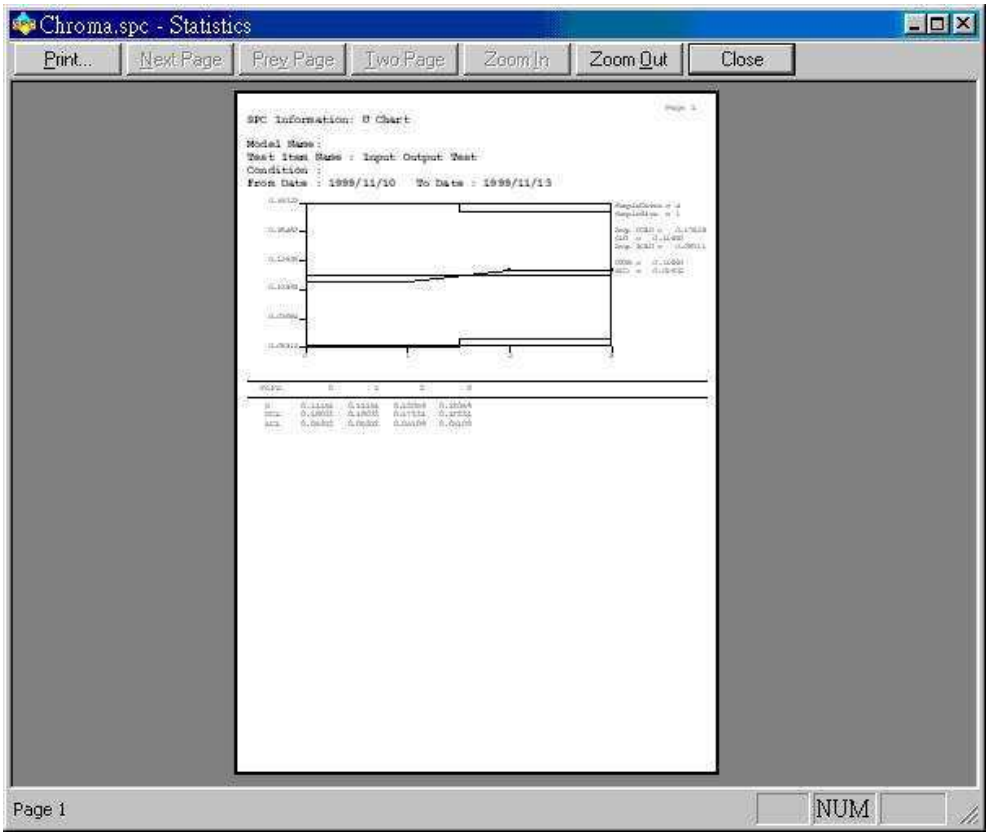


Figure 12-50 u Chart

The statistics chart result appears in preview format. The upper part shows the UUT basic information of this test item following by the statistics chart. The right part displays the statistics numbers, and the bottom displays the result value of each point.

Saving Statistics Chart

First select the reading variables for statistics chart creation, and then select the test readings for statistics calculation. Click  **Save to Image File** from the toolbar, it will appear dialog box as Figure 12-51 shows below. The figure left part is the selected variable, which is named in *TestItemName*. Property setting at right is to set if the Header, chart, data and size need to be saved in individual bitmap file. The lower right area is the directory and filename where the file will be saved. The filename can be user defined or automatically set by system

in *_ChartName* where *ChartName* will change to the test item name at the left window. The file type .bmp or .jpg can be selected.

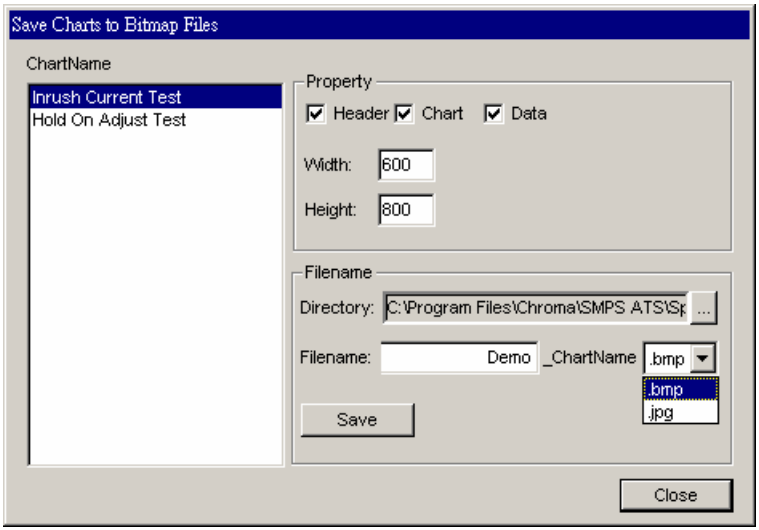


Figure 12-51 Saving Charts to Bitmap Files

12.12 Exporting Result Log Text File

This system allows exporting the test result to a text file. You can use other applications such as Microsoft Excel to manage the exported text file easily for various types report creation.

Click  on the toolbar to display all variable readings setting screen as Figure 12-52. The columns are explained as below.

Sel	Check the variable to export.
Seq	The variable sequence in test program.
Variable Name	The name of variable.
TestItem	The test item where the variable is.
LoadNo	Array variable index value. If the variable is not array variable, the index value is 0.
VariableID	The ID for variable.

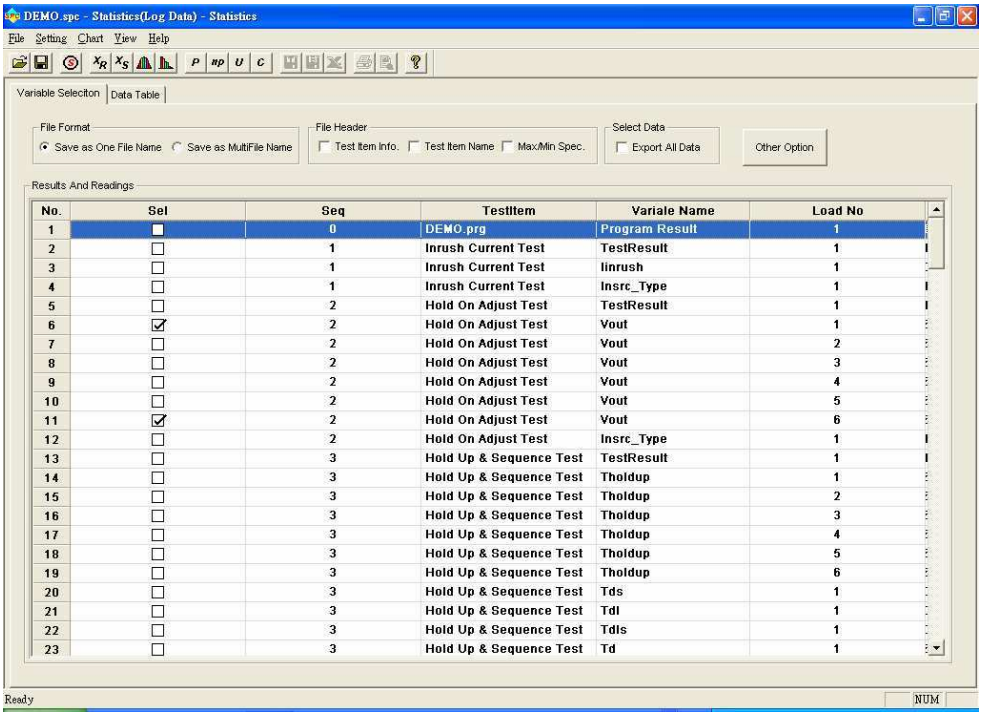


Figure 12-52 All Reading Variables in Test Program

You can select the output file format in Figure 12-52. When select “Save as One File Name”, the data will be saved in specified filename. If select “Save as MultiFile Name”, the date will be saved 256 columns a file, and the filename will be “specified filename” + “_?” + “.txt”. The reference information for title can be selected from File Header of which are Test Item Information, Test Item Name and Max Min Specification.

Note: The “?” indicates a number starting from 1.

Click the **Other Option** button in Figure 12-52will show the selection menu as in Figure 12-53.

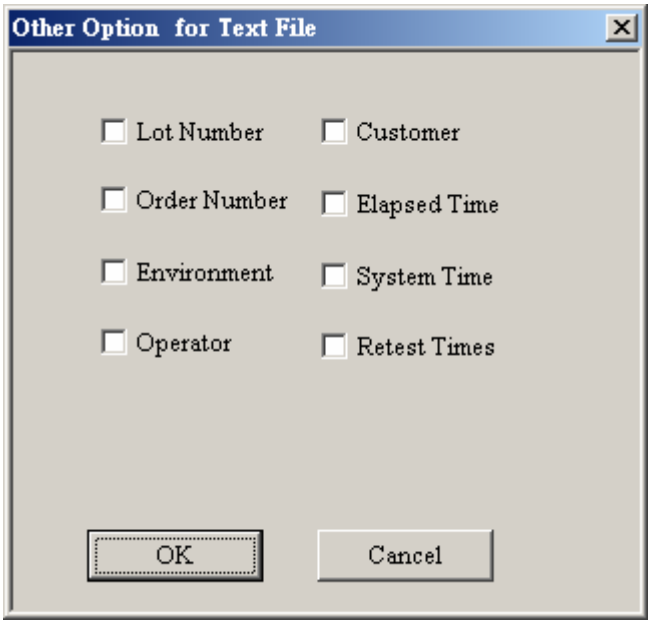
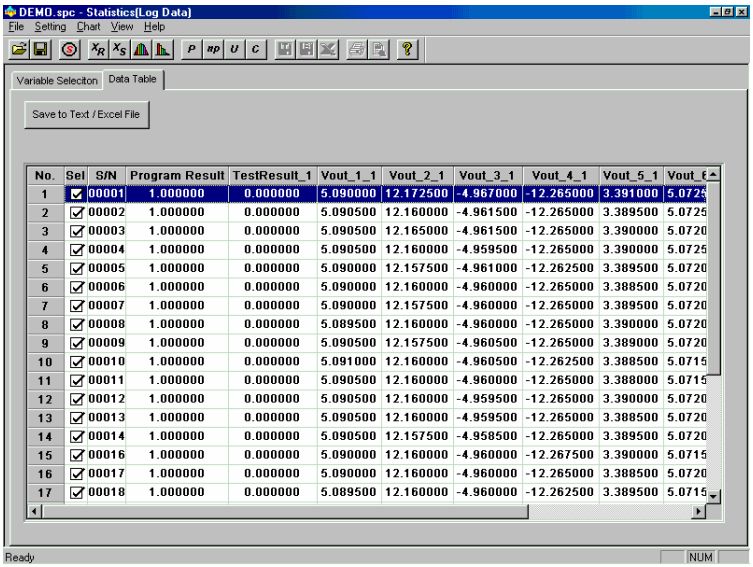


Figure 12-53 Other Option for Text File

Check the Sel column in the table for variables to export in Figure 12-52. Then go to another tab (Data Table), the checked variable will expand the serial number that meets the selection condition to a table as Figure 12-54 shows.

The columns are explained as follows.

First column:	Sel	Check the row to export.
Second column:	S/N	The UUT serial number that matches the selection.
Third column:	Following are the various variable names. Column is named in *VariableName_LoadNo_SeqNo*	



No.	Sel	S/N	Program Result	TestResult_1	Vout_1_1	Vout_2_1	Vout_3_1	Vout_4_1	Vout_5_1	Vout_6
1	☑	00001	1.000000	0.000000	5.090000	12.172500	-4.967000	-12.265000	3.391000	5.0725
2	☑	00002	1.000000	0.000000	5.090500	12.160000	-4.961500	-12.265000	3.389500	5.0725
3	☑	00003	1.000000	0.000000	5.090500	12.165000	-4.961500	-12.265000	3.390000	5.0720
4	☑	00004	1.000000	0.000000	5.090500	12.160000	-4.959500	-12.265000	3.390000	5.0725
5	☑	00005	1.000000	0.000000	5.090000	12.157500	-4.961000	-12.262500	3.389500	5.0720
6	☑	00006	1.000000	0.000000	5.090000	12.160000	-4.960000	-12.265000	3.388500	5.0720
7	☑	00007	1.000000	0.000000	5.090000	12.157500	-4.960000	-12.265000	3.389500	5.0720
8	☑	00008	1.000000	0.000000	5.089500	12.160000	-4.960000	-12.265000	3.390000	5.0720
9	☑	00009	1.000000	0.000000	5.090500	12.157500	-4.960500	-12.265000	3.389000	5.0720
10	☑	00010	1.000000	0.000000	5.091000	12.160000	-4.960500	-12.262500	3.388500	5.0715
11	☑	00011	1.000000	0.000000	5.090500	12.160000	-4.960000	-12.265000	3.388000	5.0715
12	☑	00012	1.000000	0.000000	5.090500	12.160000	-4.959500	-12.265000	3.390000	5.0720
13	☑	00013	1.000000	0.000000	5.090500	12.160000	-4.959500	-12.265000	3.388500	5.0720
14	☑	00014	1.000000	0.000000	5.090500	12.157500	-4.958500	-12.265000	3.389500	5.0720
15	☑	00016	1.000000	0.000000	5.090000	12.160000	-4.960000	-12.267500	3.390000	5.0715
16	☑	00017	1.000000	0.000000	5.090000	12.160000	-4.960000	-12.265000	3.388500	5.0720
17	☑	00018	1.000000	0.000000	5.089500	12.160000	-4.960000	-12.262500	3.389500	5.0715

Figure 12-54 Reading Variable Export Report

Click **Save to Text / Excel File** on Figure 12-54 to display the dialog box as Figure 12-55 shows. You can select the directory and filename to export an Excel or a text file and save the selected contents from Figure 12-54.

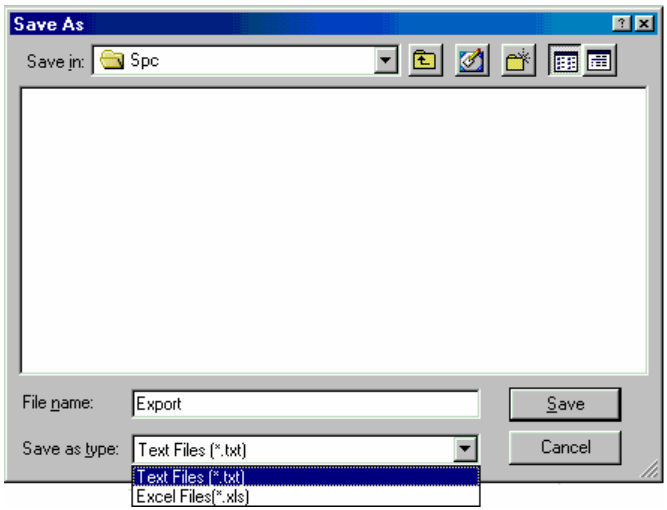


Figure 12-55 Save As Dialog Box

Note: For the "Sel" column in the table of this application, you can always move the pointer to the "Sel" title bar and click it in order to Select All or UnSelect All.

13. Report Wizard (Option)

13.1 Getting Started

In **Chroma 8000** main menu select 'Report Wizard' from 'Advance' will execute 'Report Wizard' and display its main menu as below.

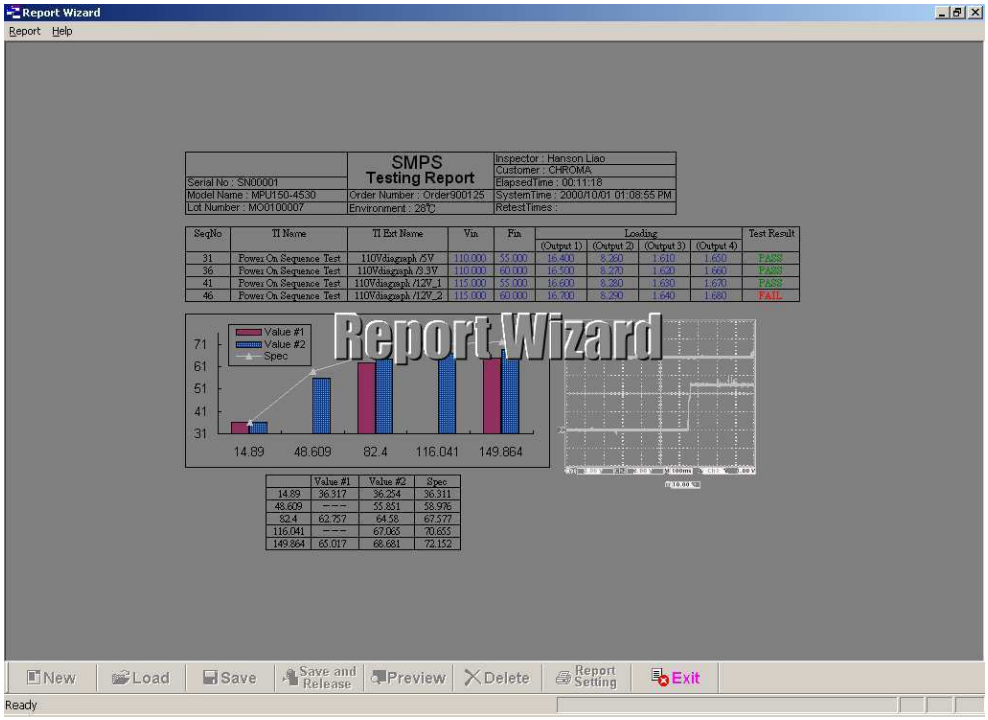


Figure 13-1 Report Wizard Main Menu

13.1.1 Execution

Before generating a report, you need to specify the test program you want to generate report for through the Report menu on the main window. Or, you can select to load the Report Set that saved previously.

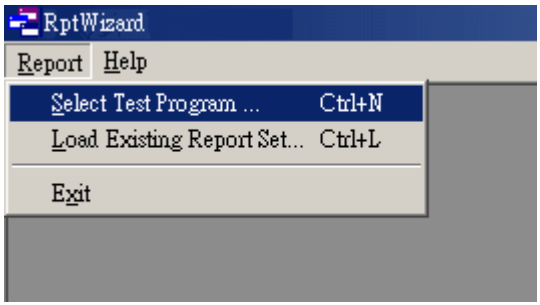


Figure 13-2 Report Function Menu

Note: Every project has test programs.

To generate report for new test program, click **[Report]→[Select Test Program]** and the program will inquire for the name of the test program. Be noted of the 'Prg' and 'Log' columns in the dialog box. Once a test program *.prg is created, it can enter the Report Wizard to start editing the report items. However, it has to wait until the test data is generated to be able to preview the edited report items or create report.

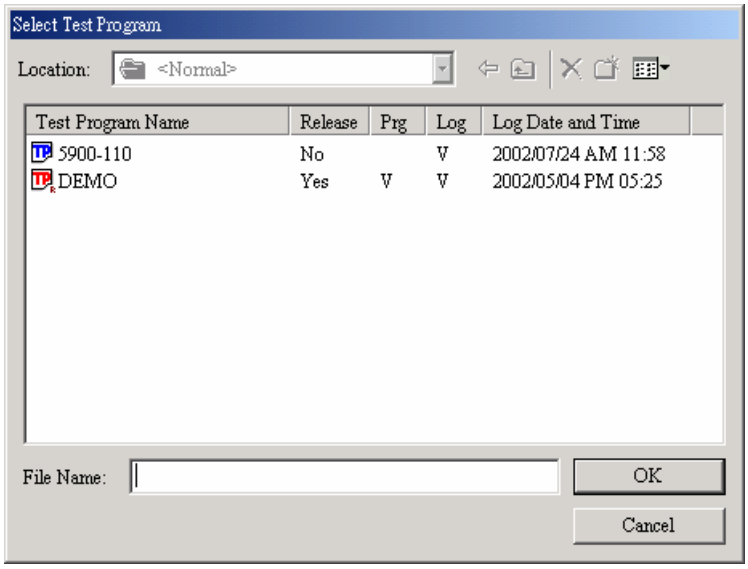


Figure 13-3 Selecting Test Program

To load the existing Report Set that has test programs, please select 'Load Existing Report Set'. The program will prompt a dialog window to inquire you for the project name. The yellow areas, which are read-only in the window, represent the selected test program and its

description. The area below shows the information of existing projects including project names, test program names, and the data/time saved as well as if they have been released.

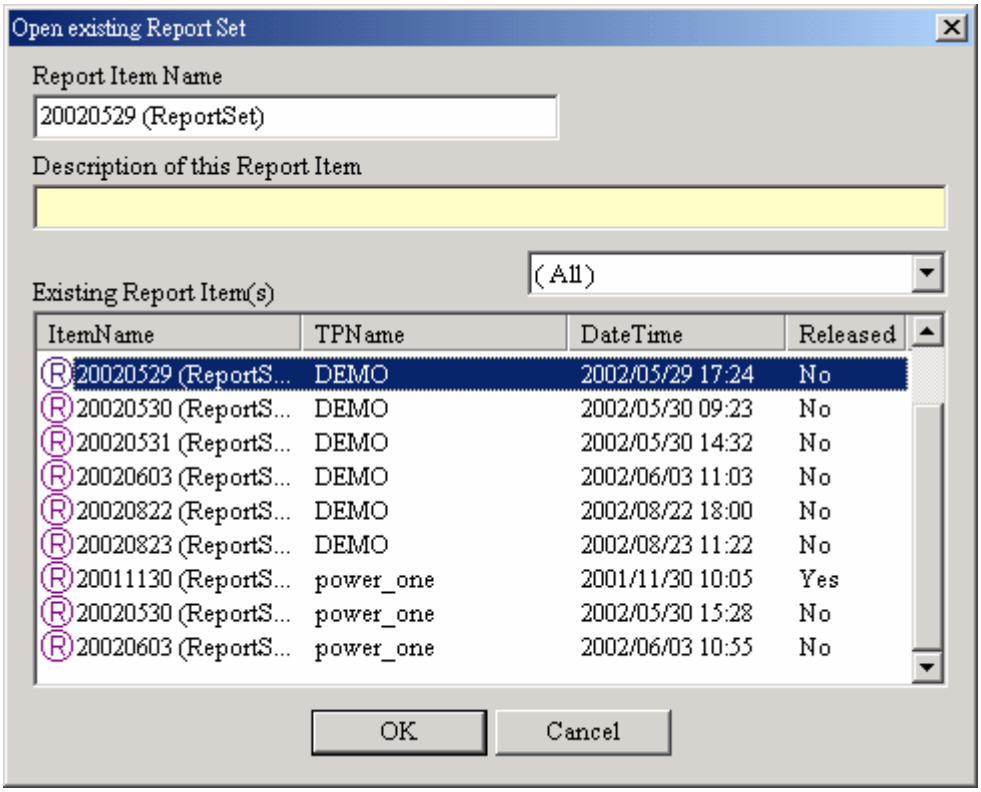


Figure 13-4 Selecting to Load Existing Report Set

13.1.2 Main Function Window

The program will appear the main function window after you selected the test program or loaded the project. In the meantime it will load Microsoft Word with the test program you are editing and list its name in the title bar as shown below.

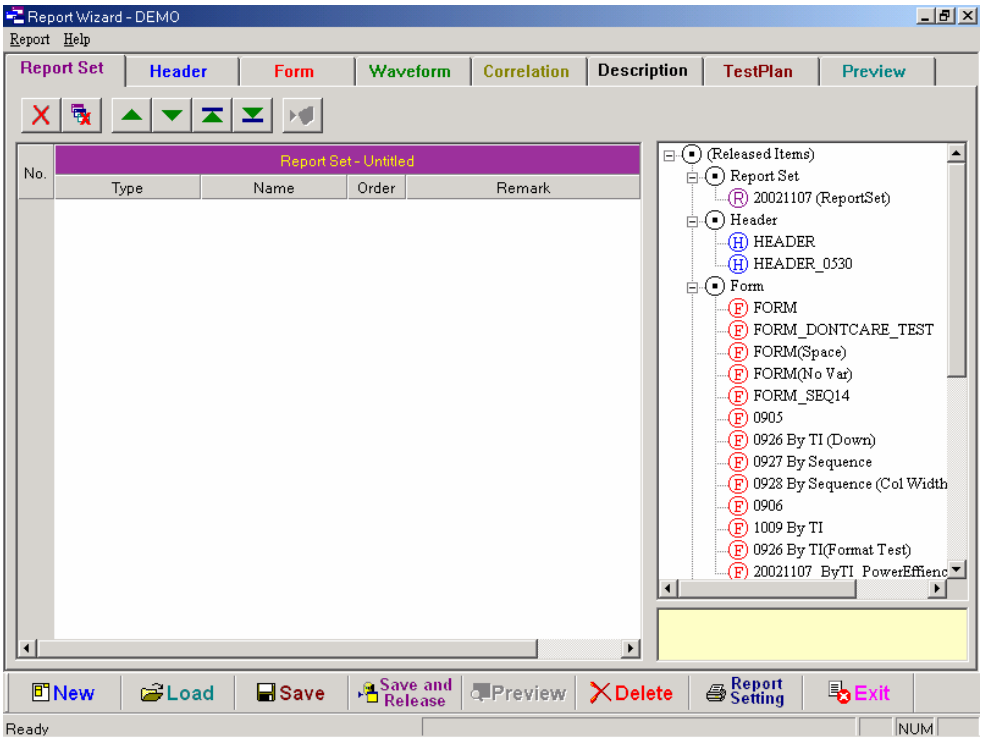


Figure 13-5 Report Set Tab in the Program Main Function Window

Note: It may take longer time to load Microsoft Word at the first time. It depends on your computer speed.

The program divides the main functions into 8 tabs. They are Report Set, Header, Form, Waveform, Correlation, Description, Test Plan and Preview Panel. The tabs can be switched and every tab contains a *Report Entity*. You can switch the tabs as need and edit the contents.

Note: When the program first starts it will be in Report Set tab as showed above.

The tree area at right displays the released report items for the current test program. In this program only released report items will be added to Report Set for report generation. When you move among different report items, the yellow area will show its description. For detail information please see section 13.2.6 Report Set.

Following lists the function group in the main window toolbar. It contains New, Load, Save, Save and Release, Preview, and Delete functions that are explained in detail as follows.

New	Clear all settings in the current tab and generate new report item.
Load	Load the related existing report item of the current tab.
Save	Save the editing report item of the current tab. It is mainly for the unfinished report item.
Save and Release	Release the edited report item in the current tab.
Preview	Preview the editing report item of the current tab. However, you cannot preview project tab but generate the report directly.
Delete	Delete the selected editing report item.
Report Setting	Print the settings of various report items.
Exit	Leave the program.

Notice:

- Partial function in main window toolbar may be different in report item. During operation you can use these functions for various report item actions.
- When you execute Preview function, the program will switch the focus to Preview tab. Please switch back to the original tab after previewed the result.
- The program will not save the current setting when executing Preview.
- You can save the current setting at anytime during editing the report items even the editing is not completed.
- Execute 'New' and 'Load' will clear all settings in current report item. *As the program won't remind you of this*, you need to 'Save' or 'Save and Release' the current report item then execute 'New' and 'Load' function.
- Execute 'Exit' will leave the program, however the program will remind you to save the modified report item. If you wish to keep the current settings, please 'Save' or 'Save and Release' the current report item and then execute 'Exit'.

13.1.2.1 Loading Report Item

You can load the report item at anytime. The report item loaded is different according to the tab you are at. Following is the example of Correlation. You can select an existing report item and click **OK**, wherein the yellow area is read-only.

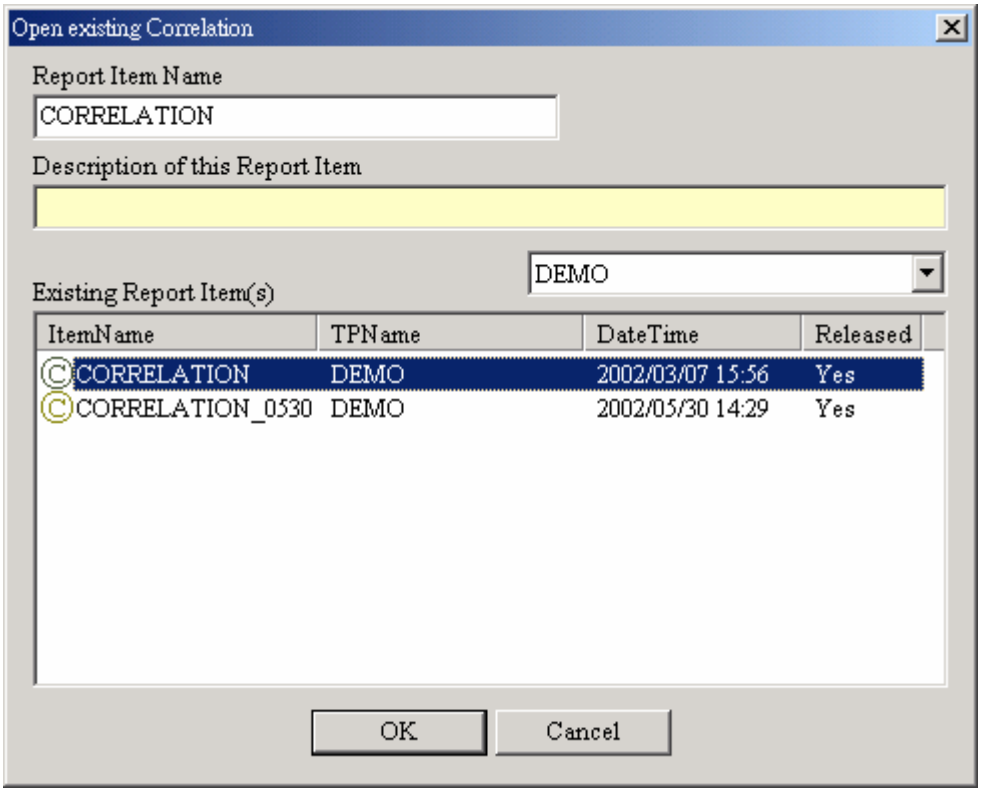


Figure 13-6 Loading Report Item Window

13.1.2.2 Saving Report Item

You can save the report item at anytime. The saved report item is different according to the tab you are at. Following is the example of Header. You can select an existing report item to overwrite the data, also enter new report item name in the yellow area to save it.

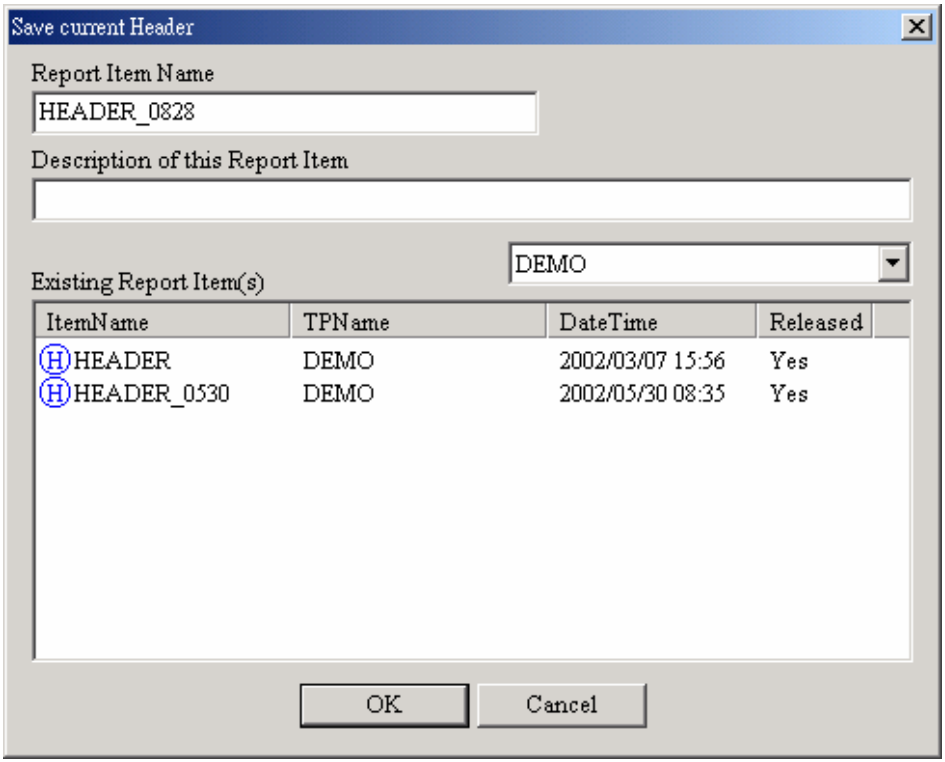


Figure 13-7 Saving Report Item Window

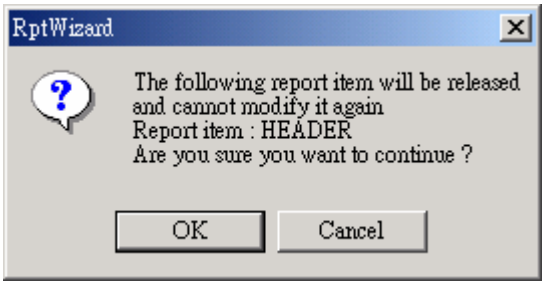
Notice:

- An error message will prompt if you try to overwrite a released report item. You can overwrite the existing but not yet released report item, however the program won't remind you of it. Please be careful when using it.

Figure 13-8 Trying to Overwrite a Released Report Item

13.1.2.3 Saving and Releasing Report Item

You can release the report item at anytime. The released report item is different according to the tab you are at. Unlike 'Save', the report item cannot be modified if it has been released. Following is the example of Waveform. You can select an existing report item to overwrite the data, also enter the name of new report item in the yellow area and release it. Similarly you cannot release an already released report item.



13.2 Operation

Following sections cover the tab of each function and its operation.

13.2.1 Report Header

You can add a new Header report item to place the title, parameter (such as test module name, and test time, etc.) or logo for completeness in the report you wish to generate.

To edit Header report item, switch to Header tab.

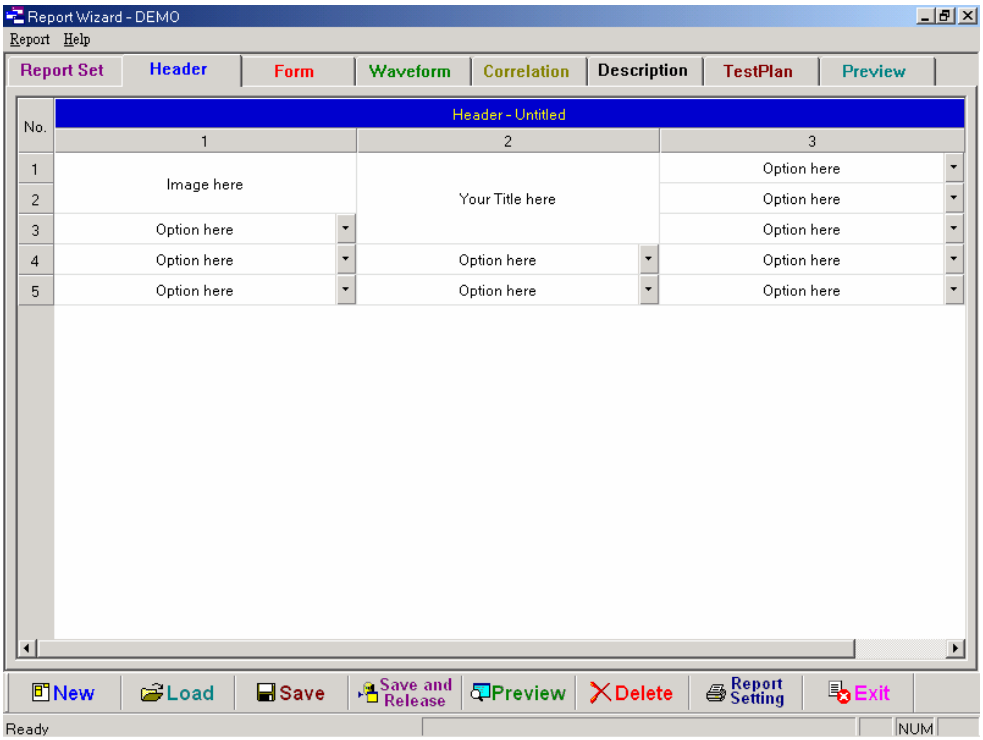


Figure 13-9 Header Report Item Tab Window

For convenient operation, the Header design is fixed in three by three format for earlier version and five by five for later version as showed below. It includes Image, Title and Option.

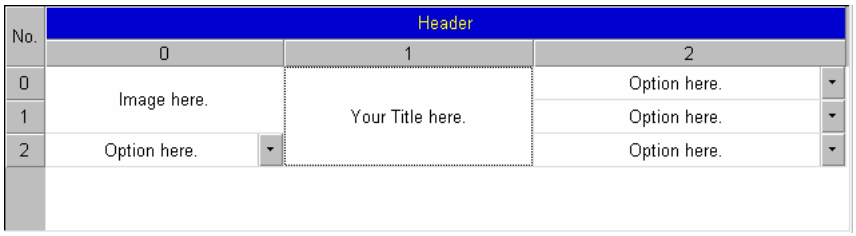


Figure 13-10 Header Format

13.2.1.1 Setting Header

1. Editing text:
   Double-click any Header cell and use keyboard to edit the reversed text in the cell as shown below.

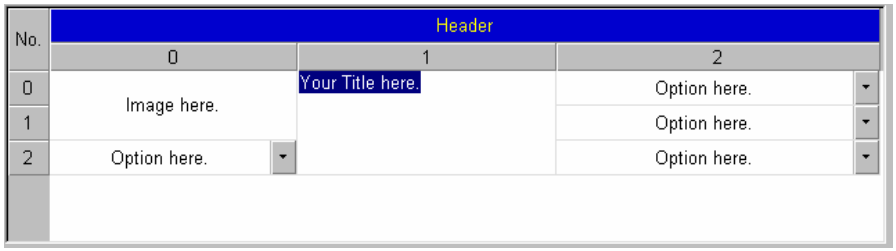


Figure 13-11 Editing Header Text

2. Inserting/Deleting Image:
   You can only insert or delete images at 'Image here' cell in the Header upper left corner. Click the right mouse button at the cell to add new image, then select **Insert Image** from the menu, a dialog window will appear to let you specify the file to add.

Figure 13-12 Adding Header Image

You can click right-click the specified image and select **Delete Image** from the menu to delete image from Header.

Figure 13-13 Deleting Header Image

Notice:

- It will follow the cell size to adjust the image display when loading an image. The image you see may not in its original size. You can change the cell size for display. However, when generating report in Word you can resize the image as need.
- Image can only be set in the upper left corner in this program. However, you can move it to any place you want in a Word report.
- Every Header can insert one image file at most, generally company Logo is preferred; however, it only supports the Bitmap file format today.

3. Setting Option:
   You can set it to display the options such as Model Name and Load Count, etc. in the program. The option can be selected from the drop-down menu of the cell as the figure shown below.

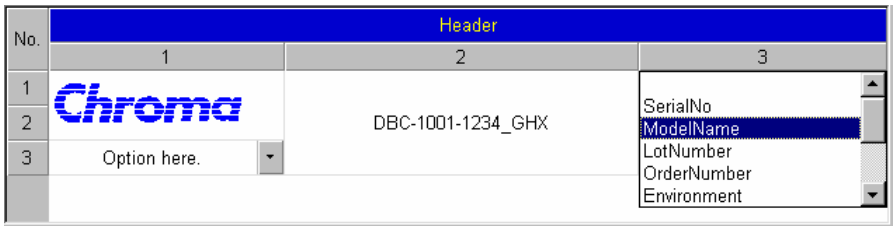


Figure 13-14 Setting Header Option

After selecting the option, the program will display ”$” to separate it from the editing text. The program will get the correct data to show on the report when generating it.

13.2.1.2 Previewing Header

You can preview the Header result before generating report to Word. After you clicked Preview, a dialog window will appear to let you specify the result of UUT Serial Number report to preview.

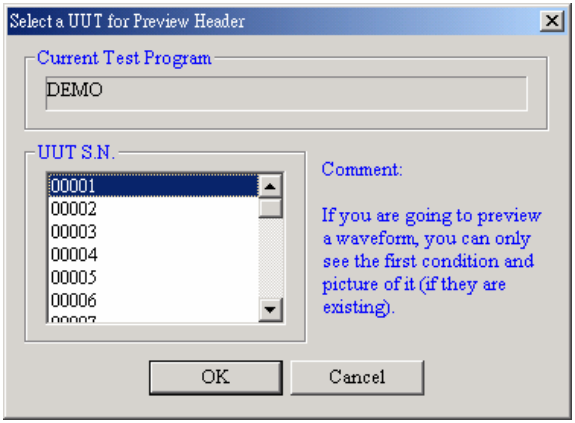


Figure 13-15 Selecting UUT for Preview Header

Note: The UUT Serial Number selected here is for temporary preview only not for report generation. The program will ask you for the UUTs that you want to generate the report for when you actually do it.

Latter the program will switch to Preview tab and generate the preview result of the Header report item as shown below.

Figure 13-16 The Result in Preview Window

13.2.2 Report Form

To display the UUT's test conditions, readings or test results during report generation; you can add a new Form for the report in order to place them.

Switch to Form tab to edit the Form of the report.

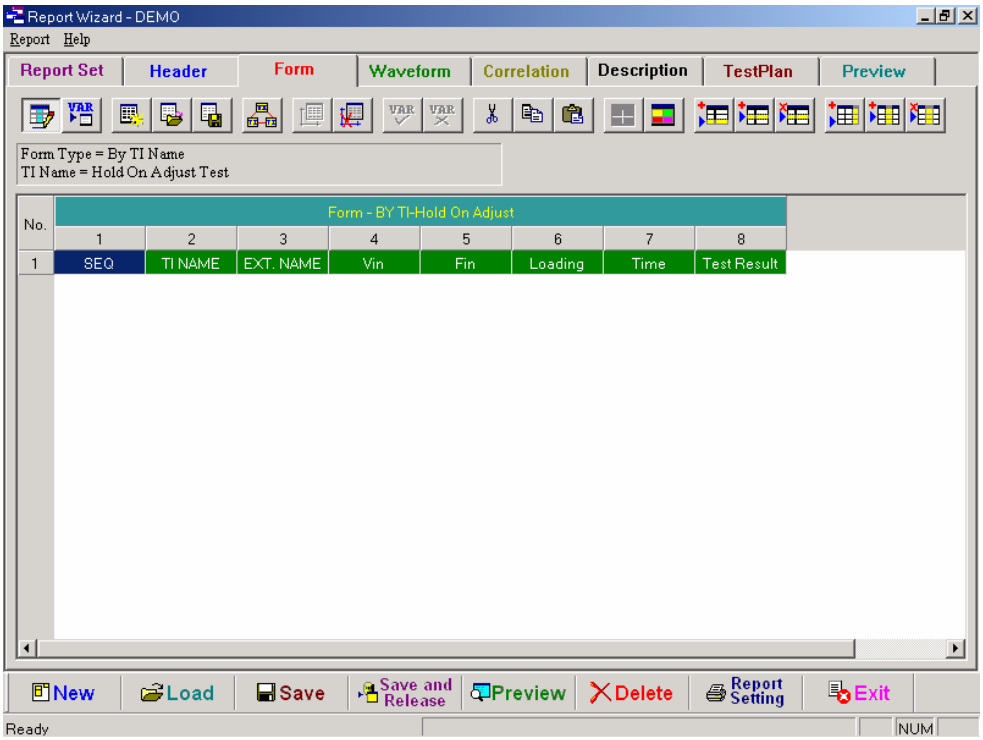
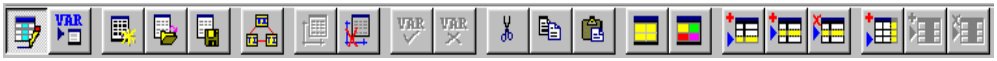


Figure 13-17 Form Report Item Tab Window

13.2.2.1 Form Toolbar

The Toolbar appears on the window is for Form only. You can move the mouse pointer and stop at a toolbar button for 1 second; the program will show its function Hint. Some functions may not be executed in some situations as the buttons may be disabled.

The functions are described as follows.



Report Editing Mode: You can edit report in this mode.

Variable Setting Mode: You can set variable in this mode.


To generate new form for this report item. The program will inquire you if you haven't set the report format.


To load the existing report format. This action will clear the setting in current tab including variables.


To save the current report format but not variable settings.


To define a Test Item Group.


To specify the range for variable settings.


To clear the specified variable range. This action will clear all variables that set in the range.

Set variable: Specify the cell variable in variable setting mode.

Clear variable: To clear the cell variable in variable setting mode.


Cut: To cut the selected area without variable information in report editing mode.


Copy: To copy the selected area without variable information in report editing mode.


Paste: To paste the copied data without variable information in report editing mode.


Merge the cell: To merge the selected cells.


Cancel the cell merge: To cancel merging the selected cells.


Add a new row: To add a new row at the end of the report.


Insert a new row: To insert a new row at the current row.


Delete a row: To delete the current row.


Add a new column: To add a new column at the rightmost of the report.


Insert a new column: To insert a new column at the current column.


Delete a column: To delete the current column.

Notice:

- Only set and clear variable functions are available in variable setting mode. The rest functions are disabled but can be executed in report editing mode.
- You need to specify the variable setting range for 'By Test Item Form' and 'By TI Group Form' before entering variable setting mode.
- If you execute the function to clear the specified variable range, it will also clear the set variables in the range.
- Variable setting range cannot exceed one row.
- Variable setting range cannot merge cells.
- Cut and paste cannot handle the merged cell and are inactive to variable.
- Do not destroy the merged cell in a column or a row when adding one. If the newly added row/column is in the variable setting range, the program will automatically expand the variable setting range.
- Do not destroy the merged cell in a column or a row when deleting one. If the deleted row/column is in the variable setting range, the program will automatically change the variable setting range. If there is a variable defined in the column/row for deletion, the program will delete it automatically.
- The functions in toolbar will follow your current action or setting status to decide if they are executable. For the function not executable will be disabled.

13.2.2.2 Form Type

There are five types of Form in the program as explained below.

(1) By Test Item Form : To generate report for a particular Test Item. If there are several Test Items in the test program, the program will list all test data of the Test Items.

(2) By TI Group Form : To generate report for all Test Items in Test Item Group, which is the union of several Test Items. You need to specify the Test Items to be the member for Test Item Group before using it. When specifying the variable, you can only specify the one that owned by all members.

(3) By Sequence :Semi free format. Specify the test item and variable name of each variable, the Load parameter will expand automatically.

(4) Free Format Form(By Sequence)	: Free format. You need to specify the test item, variable name and Load No. for each variable.
(5)Free Format Form(BY TI)	: Free format. You need to specify the test item, variable name and Load No. for each variable. If a Test Item is repeated several times in a test program, the program will list all test data of that Test Item.

13.2.2.3 Specify Form Type

You need to select the Form type before setting the variable. If you specify new form or new form format, the program will inquire you for the Form type. You don't need to set the form type if you are loading an existing Form. When you are loading an existed form format, if the form type is not defined, the program will ask you for it. You can start editing Form format and specify Form parameter.

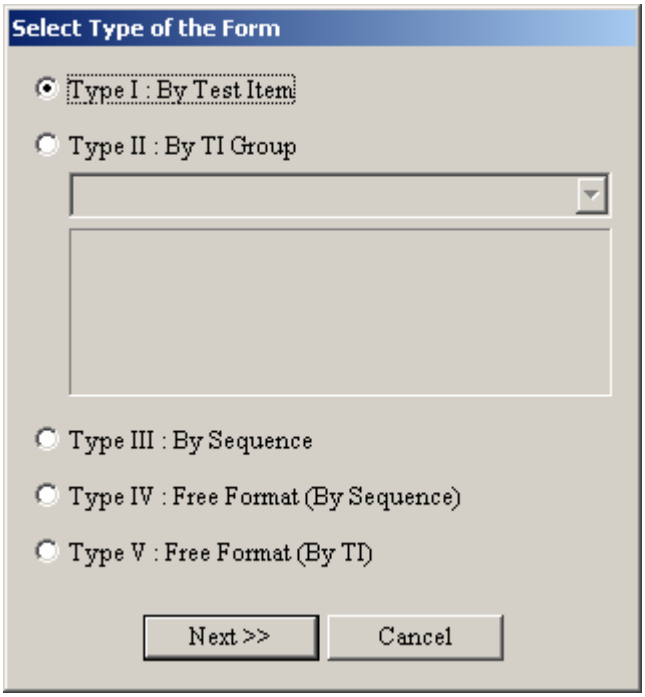


Figure 13-18 Selecting Form Type

1. After selecting 'By Test Item Form', click **Next>>** button will show a dialog window for you to specify the Test Item name.

2. After selecting 'By TI Group Form', you need to use the drop-down menu to select the name for TI Group, and then click **Finish** button. If the drop-down menu is blank it means you have not defined a Test Item Group. For Test Item Group setting, please refer to section *13.2.2.4 Setting Test Item Group*.
3. If selected By Sequence or Free Format form then there is no need for other setting. You can start editing right away.

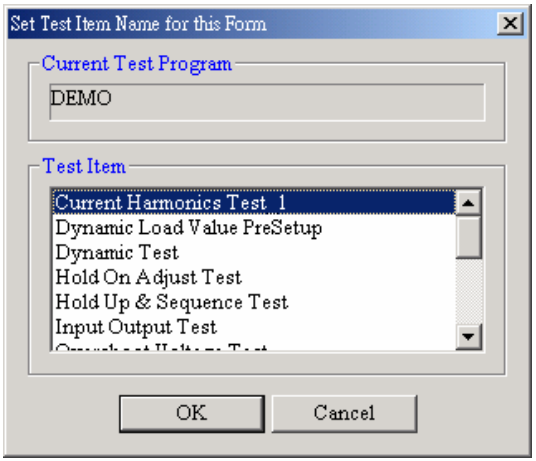


Figure 13-19 Setting Test Item Name

13.2.2.4 Setting Test Item Group

If you wish to include several different Test Items in the generated report, you need to specify a Test Item Group first then insert different Test Items to it.

To set Test Item Group, you can execute Test Item Group function defined on the Form toolbar. A Test Item Group window will prompt for you to create a new or modify an existing Test Item Group. Click Create New TI Group to create a new group, or choose Modify TI Group to modify an existing one, then click **Next>>** button for the following step.

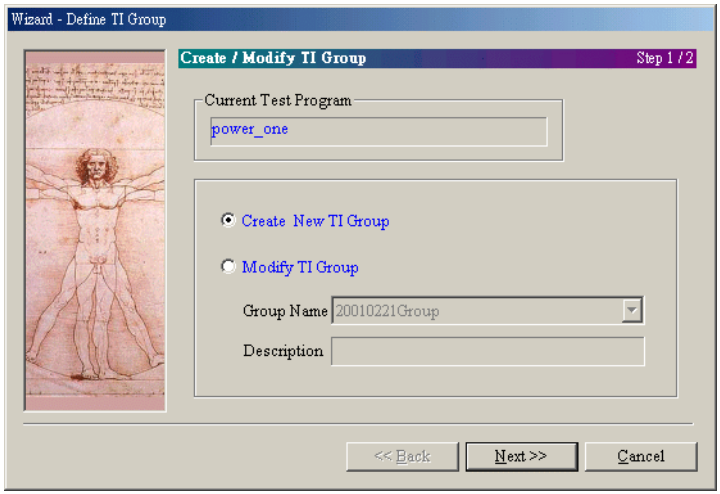


Figure 13-20 Setting Test Item Group – Step 1

The left area lists all Test Items in the Test Program, while the right area lists the Test Items that already added to Test Item Group in step 2. You can use **Add=>** and **<=Del** or double-click Test Item to add Test Item to Group or delete from it.

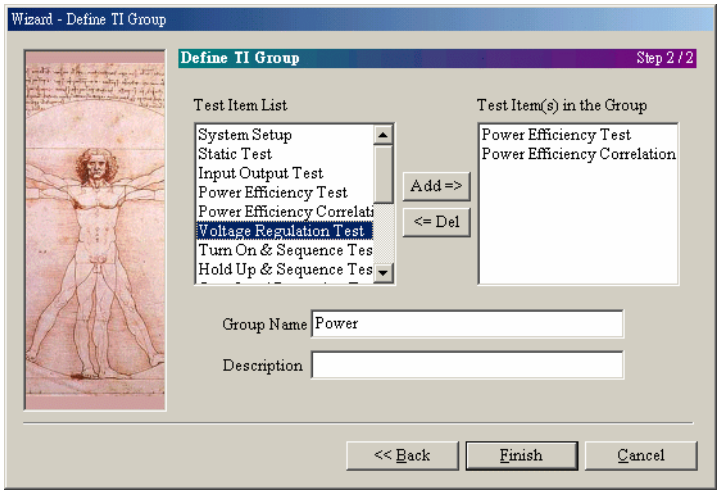


Figure 13-21 Setting Test Item Group – Step 2

You need to name the Test Item Group after selected the members. For management in the future, you can also fill in the description (which is omissible) for Test Item Group.

13.2.2.5 Editing/Setting Form

Form has two modes: 'Edit Form' mode and 'Set Variable' mode. 'Edit Form' mode can let you set the report layout including Form columns and rows, merged cell, load and save Form format, etc. 'Set Variable' mode can let you set the variable to display for a certain cell when generating the report. *These two modes cannot be executed at the same time*. You need to use the icon on Form toolbar to switch them.

1. Editing Form
   You need to switch to 'Edit Form' mode to edit Form. Double-click the cell to edit or input text. You can also use Copy, Paste, Merge, Insert Row, and Delete Row, etc. functions on the Form toolbar to perform the work.

2. Saving/Loading/Clearing Form Format
   The edited Form can be saved for future use. You can use load, save and clear functions on the Form toolbar to complete the work.

3. Defining Variable Range
   Before setting variable, you need to define the range for it. You can select the range and use Form toolbar to set it. The program will use different color to show the range for variable setting.

   Notice: Variable setting range cannot exceed one column.

4. Specifying Variable
   a. You need to switch to 'Set Variable' mode before specifying the variable.
   b. You can only set variable within the defined range.
   c. Double-click it or use the 'Set Variable' button on the toolbar for variable setting.
   d. You can define the six major options for variable: Available Variables, UUT SN, Name of Test Item (TI Name), Name Test Item Extension (TI Ext. Name), Load Name and so on as showed below. You can select the variable and click **OK** or double-click the variable to confirm the selection.

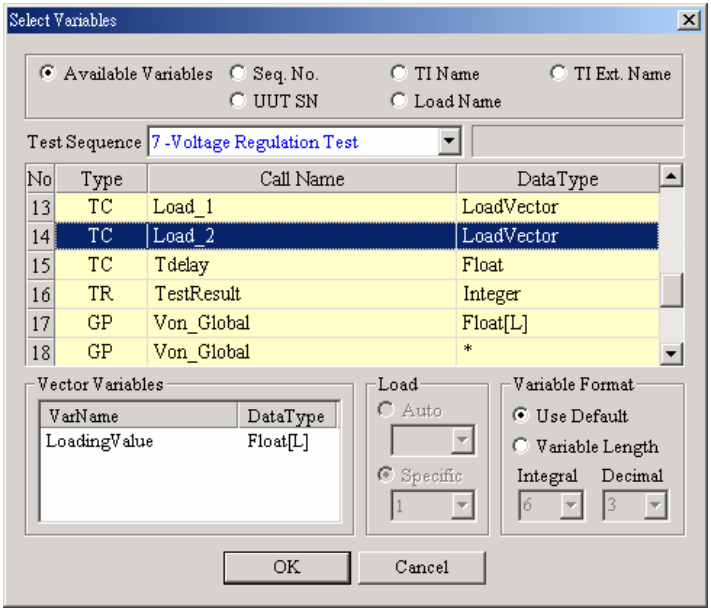
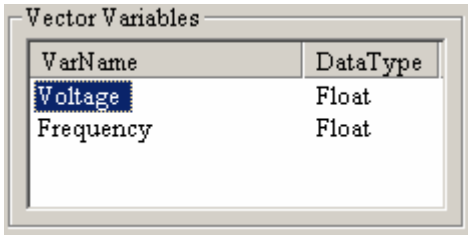
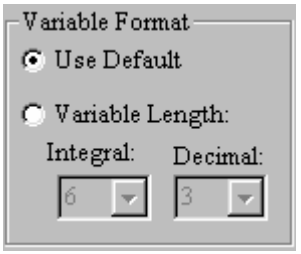


Figure 13-22 Specifying Form Variable Dialog Window

e. If chose 'Available Variable', you need to select a variable from the list in yellow area. (i) If this variable is associated with Load, then when report generates it will follow the test program load number to expand to several variables. You can select the variables to expand 'Auto Right' or 'Auto Down'. It will affect the report generation type. (ii) If you selected a Vector, please select one of the variables from the lower left window.



f. You can also define the 'Variable Format'. 'Use Default' uses six integrals and three decimals for display format.



Notice:

- The dialog window for specifying variables will be different from the Form types. For example, Test Sequence is selectable in Free Format Form, but it is not selectable in 'By Test Item Form' and 'By TI Group Form'.
- You can use the sorting function to sort variable's Type, Call Name or Data Type by double-clicking to find out the variable that you want to set quickly.
- Form uses different colors to indicate the current status during setting variables: (1) Blue: means no variable set in the range; (2) Green: means the variable set in the range; (3) Red: means the variables are setting in the range; (4) Yellow/White: means unable to set the range.

13.2.2.6 Previewing Form

Before generating report to Word, you can preview the Header result. Clicked Preview function on the function bar to display a dialog window so that you can specify the report generation result for the UUT Serial No. you want to preview.

The Preview result shows on Preview tab. If you want the preview result, you can switch to Form tab and Release the edited Form. Before doing that you can return to Project tab and add the edited Form to a project for generating the report to Word.

13.2.3 Waveform Item

You can add a Waveform item to place the Waveform figure if you have its data in the test program.

The Waveform item supports PCX, BMP, JPG and TIF formats. To edit it, switch to Waveform tab first.

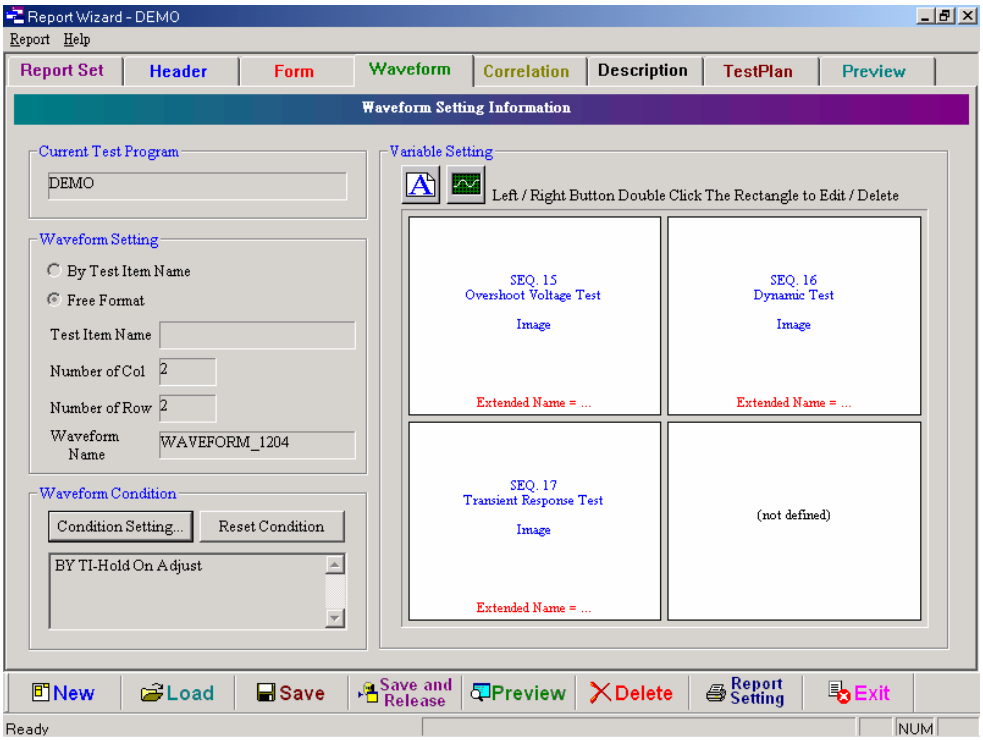
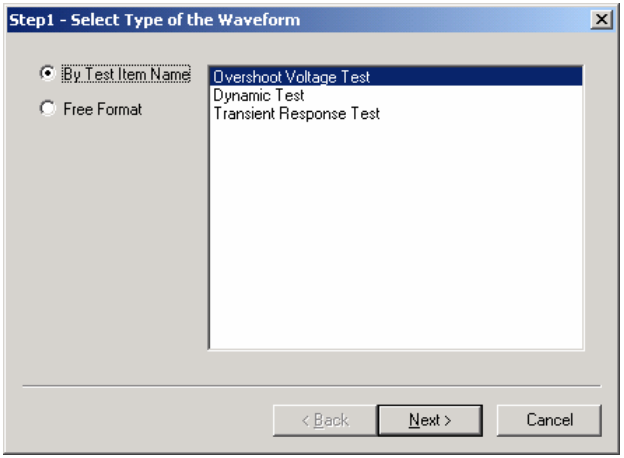


Figure 13-23 Waveform Tab Window

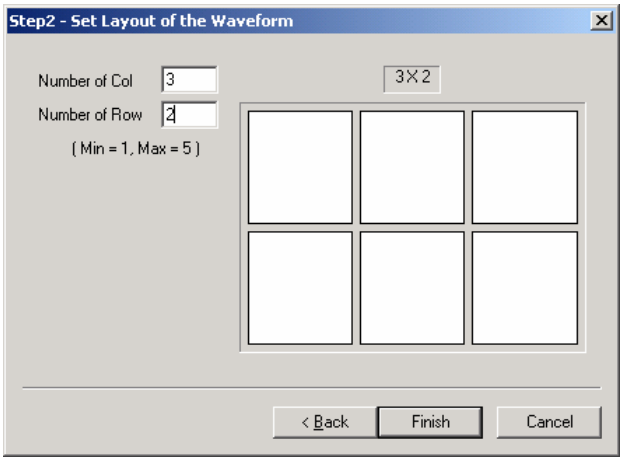
13.2.3.1. Setting Waveform

After switching to Waveform tab, you can start to create a new Waveform.

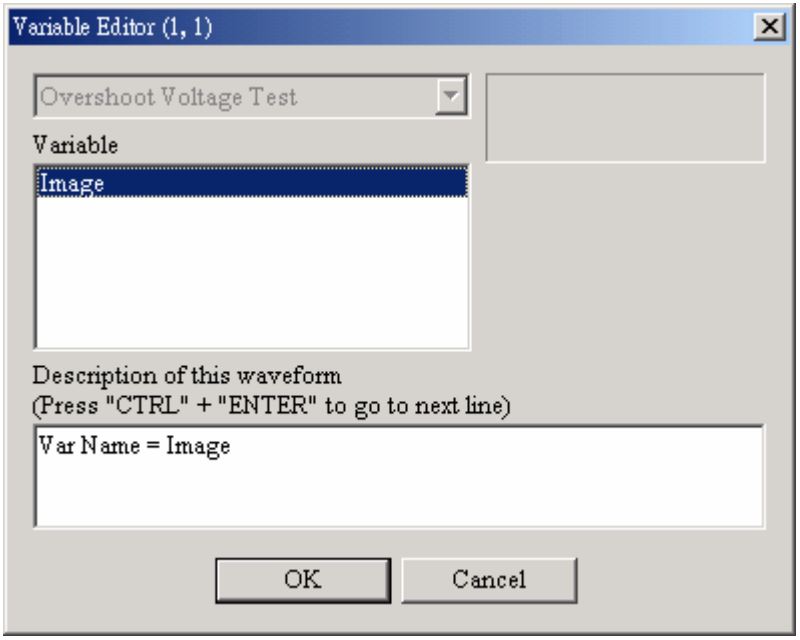
Click **New** button in the toolbar to show a wizard-type dialog box for you to create a new Waveform step by step. In step 1, you need to select the Waveform type. If you select **By Test Item Name**, you need to specify one test item as well. **RptWizard** will generate the report of the test item. If there are several test items in the test program, the program will list all waveform data of the test items. If you want to show several waveform data of different test items, you can select **Free Format**, and **RptWizard** will ask you to select sequence and call name of every waveform data. Click **Next >** to go to step 2.



You can show several waveform data in a Waveform. You can specify the column and row numbers to do so. The number greater than 5 is not admitted. When you change the numbers, the right area will show the layout result.



After clicked **Finish** , all the information you edit will show in the left area of main window. You have no chance to modify them. The result of layout will show in the right area of main window. There are 6 waveform data in the Waveform in this example. The string **"(not defined)"** means that this position is not yet assigned variable. You can double click the left button of the mouse in one rectangle to assign variable. If you select **By Test Item Name**, the combo box will be disable because you have done it in step 1. The contents in the bottom edit box and the waveform data will be showed in the report both together.



If you need a Form to display the Waveform related information such as Output/Input Voltage, etc., you can click **Condition Setting** button to show a wizard-type dialog box for you to select an existing and released Form. If there is no Form in the database, you can switch to Form tab and edit the Form you need. You can click **Reset Condition** button to clear the associated Condition Setting of the Waveform. If select **Free Format**, you have only one choice, Type I, which means all conditions will be show in the beginning of the Waveform.

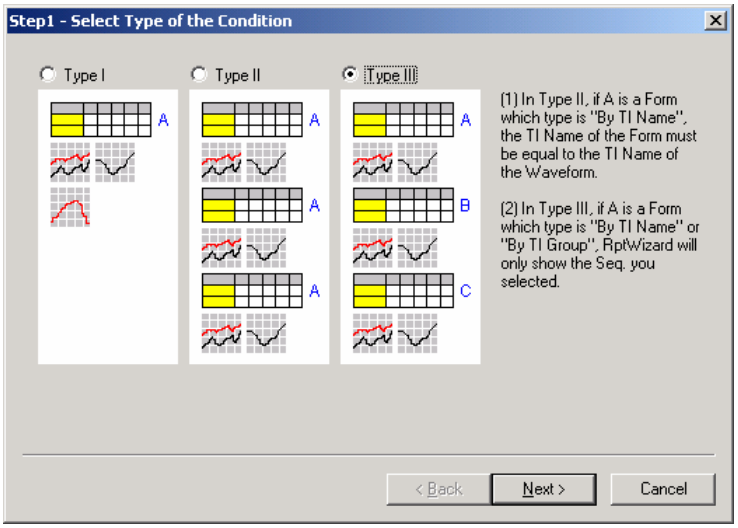
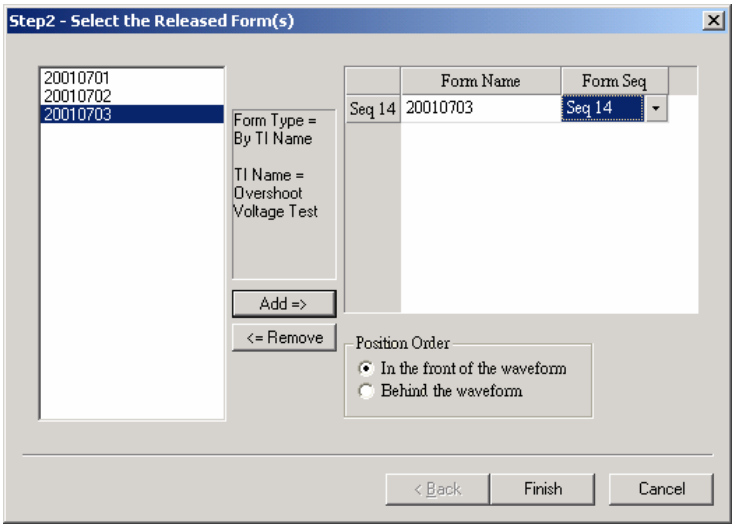


Figure 13-24 Condition Setting

In step 2, the edited and released Form(s) are listed in the left box. The right box lists the sequences for you to specify its condition. Click **Add=>** will send the selected Form in the left list box to the selected sequence in the right grid. If the Form is **By Test Item** or **By TI Group**, you have to specify the Seq. number of the Form as well. The **Position Order** at lower right can specify the Condition to be placed in front of the Waveform or behind it.



13.2.3.2. Previewing Waveform

You can use Preview function to preview the result of generated report. The Preview result shows on Preview tab. If you want the preview result, you can switch to Waveform tab and release the edited Waveform. Before doing that you can return to Report Set tab and add the edited Waveform to a project for generating the report to Word.

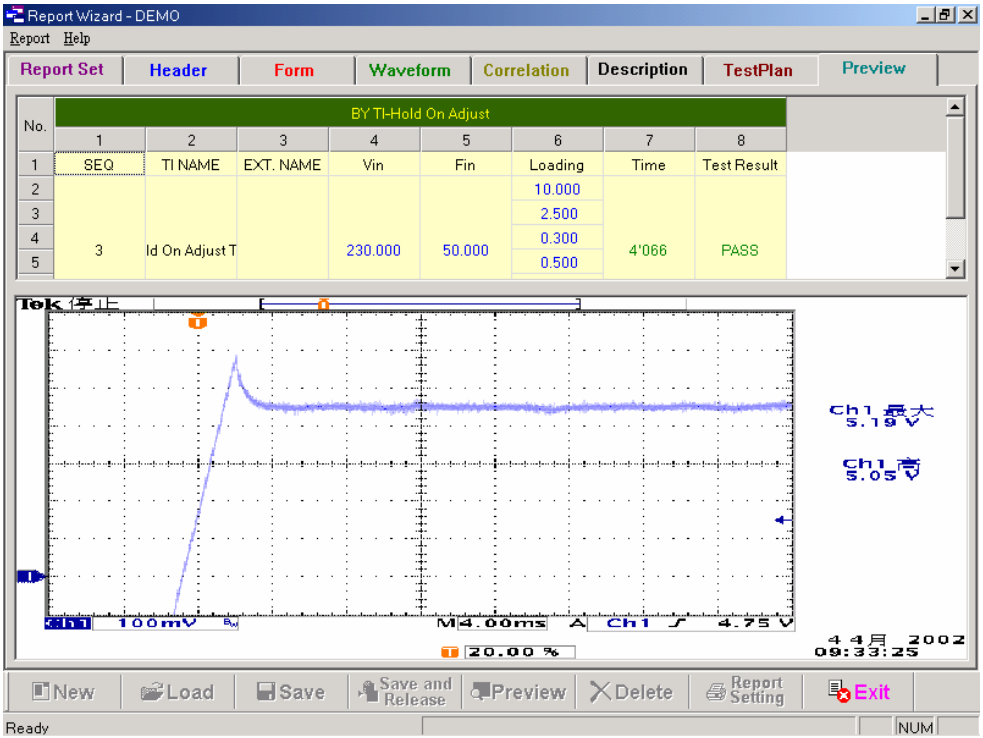


Figure 13-25 Waveform Preview

13.2.4 Description Item

You can add a description item to the report you wish to generate for text insertion such as chapter title or addendum.

Switch to Description tab to edit the Description item.

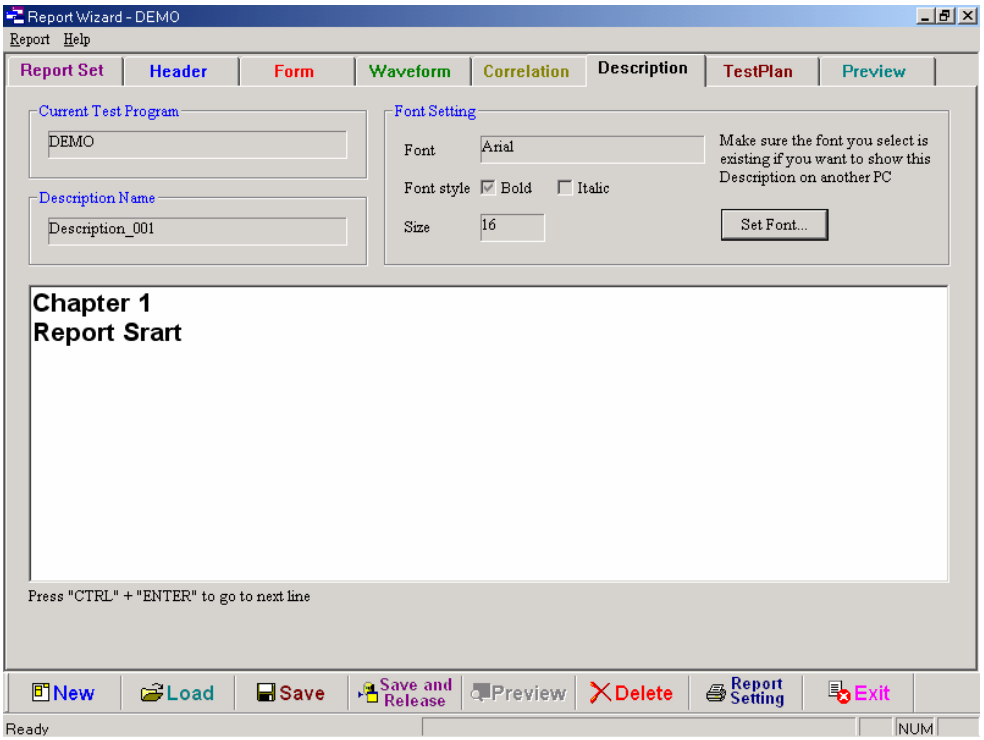


Figure 13-26 Description Tab Window

It is easy to edit the Description item. Just enter the text you wish to insert in the report and press **Ctrl** + **Enter** to go to the next line. Click **Set Font...** if you wish to change the font size. The program will prompt a standard font selection dialog box for you to choose the font type, style and size.

Every computer has different types of fonts available for use. If you edit a Description to output to another computer for report generating, please ensure there is the same font for the Description to avoid displaying crashed fonts or creating unexpected result.

13.2.5 Correlation Item

You can add a Correlation report item in report. To edit it, please switch to Correlation tab.

13.2.5.1 Setting Correlation

After switching to Correlation tab, use the drop-down menu to select test item, X- Axis variable name and UUT, then click **Apply** button to set it. At this time Correlation display can be set. The program can sift out the test sequences and variable names that contain Correlation data. If the Test Sequence drop-down menu has no data, it means there is no Test Sequence that has Correlation data, please try another test program.

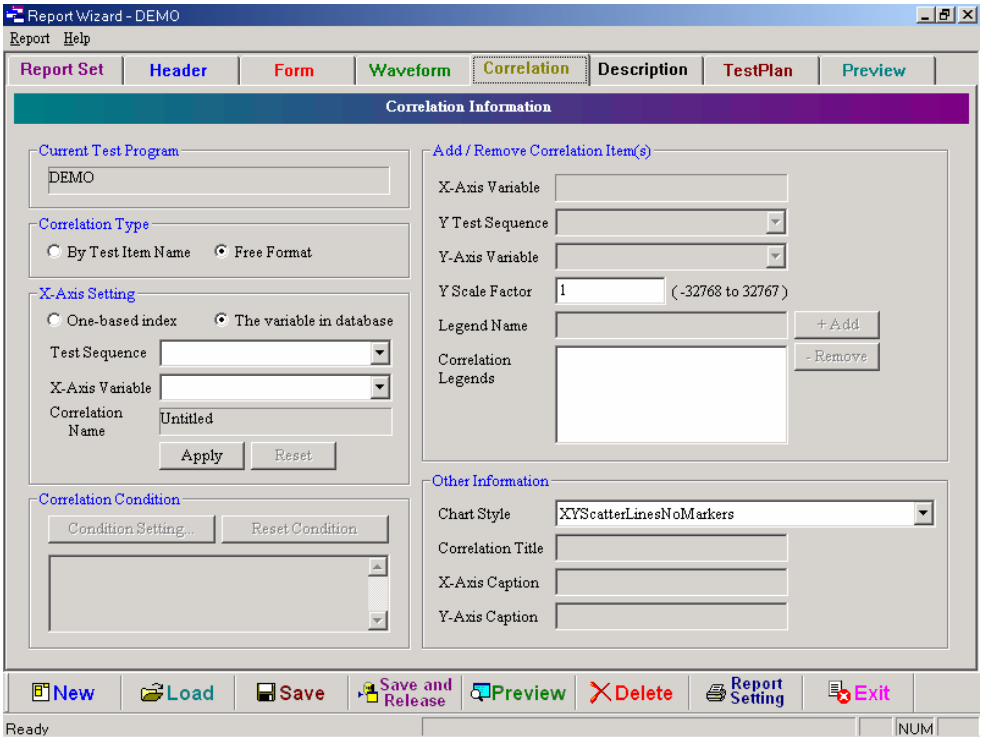


Figure 13-27 Correlation Tab Window

After set the X-Axis variable, you can select several Y-Axis variables to complete the Correlation setting. Please use the drop-down menu to select Y-Axis test sequence, Y-Axis variable name and Legend Name, then click **+ Add** button to add the settings. The program will load the variable related information, and its loading time depends on the amount of data.

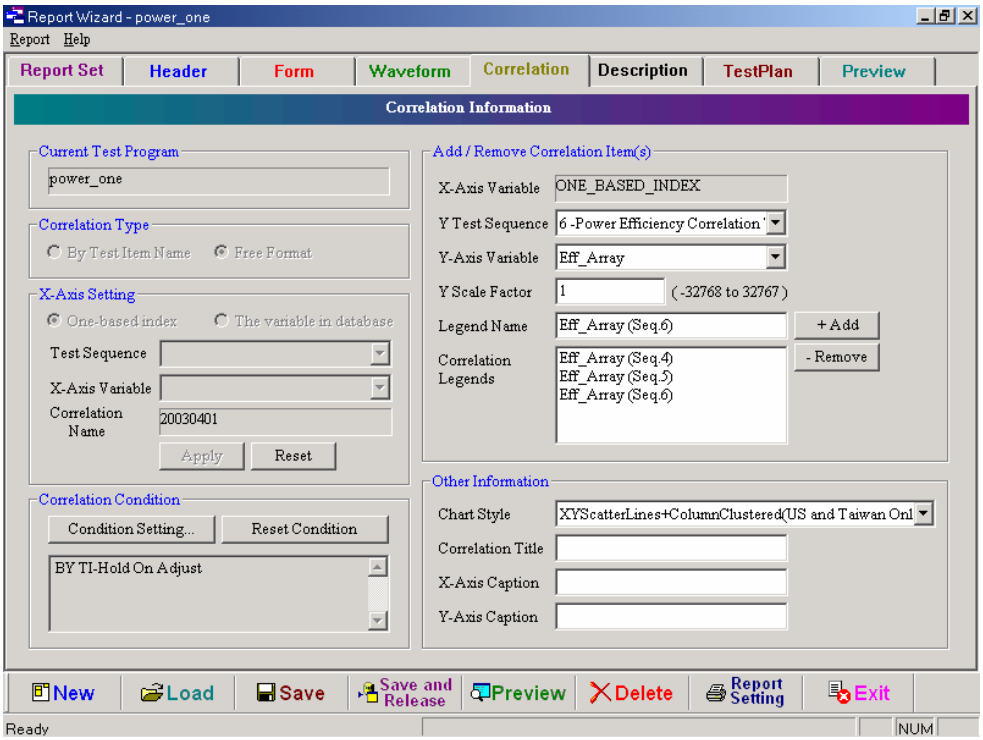


Figure 13-28 Correlation Variable Setting

You can set the Correlation Title, X-Axis Caption and Y-Axis Caption for Correlation at the lower right area.

If you need a Form to display Correlation related information at report generation, you can click **Condition Setting** button to prompt a dialog window for you to select an existing and released Form. If there is no Form in the window, please switch to Form tab and refer to section *13.2.2 Form Report Item Description* to edit the Form you need. To cancel Correlation associated Condition setting, click **Reset Condition** button.

13.2.4.2. Previewing Correlation

You can use Preview function to preview the generated result. The Preview result shows on Preview tab. If you want the preview result, you can switch to Correlation tab and Release the edited Correlation. Before doing that you can return to Report Set tab and add the edited Correlation to a project for generating the report to Word.

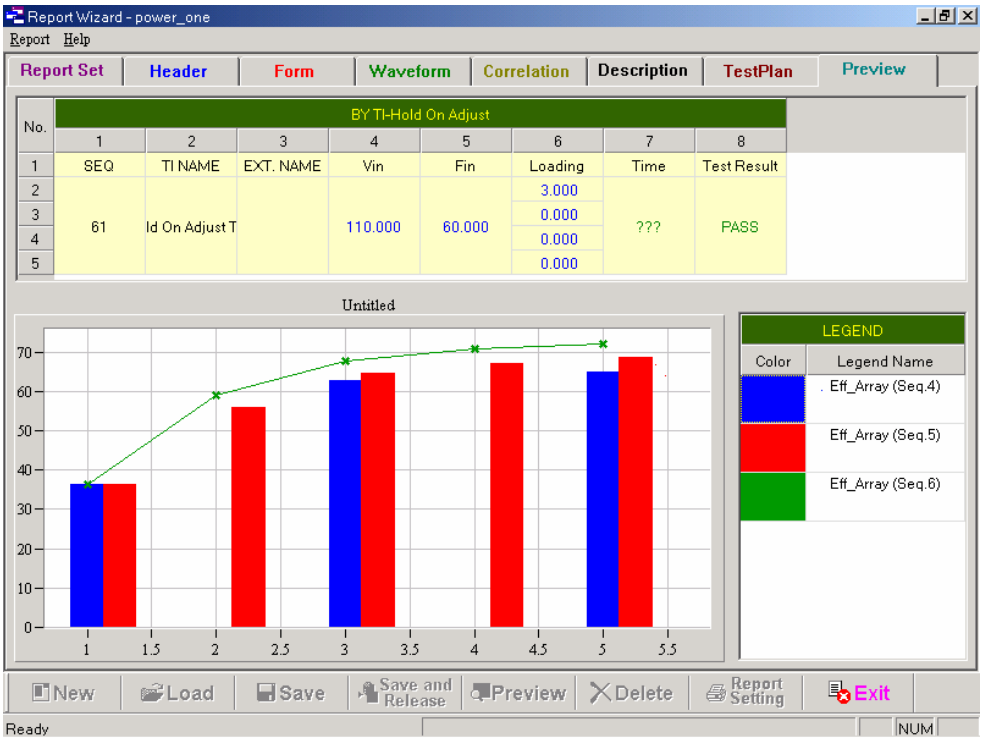


Figure 13-29 Correlation Preview

Note: If X-Axis variable and Y-Axis variable both are True Array Type data variables.

13.2.6 Report Set

After the report items for report generation are set and released, you can start editing your Report Set item.

To edit Report Set item, please switch to Report Set tab first.

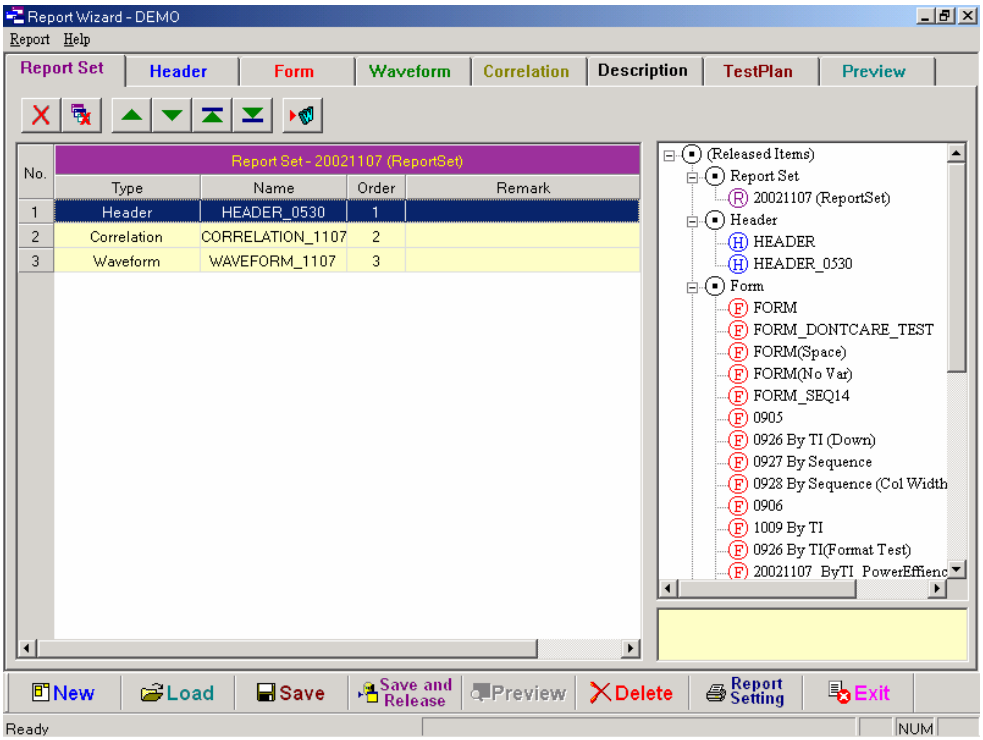


Figure 13-30 Report Set Tab Window

13.2.5.1 Setting Report Set

In Report Set tab window the left area lists the report items in the current Report Set. As the figure showed above the Report Set has four report items. The right area lists the Released report items in the current test program. In this program only the Released report item can be added to Report Set for report generation. When you move around different report items the area below will appear the report item description.

To add a report item, you can move to a report item at right and double-click it.

You can also use the Report Set toolbar on the top to delete the report item from Report Set or change its generation sequence. Following is the detail description of Toolbar.


Delete the report item the pointer is at.


Delete all report items in current project.


Move the report item one row upward. (Change the report item generating sequence.)


Move the report item one row downward. (Change the report item generating sequence.)


Move the report item to the top. (Change the report item generating sequence.)


Move the report item to the bottom. (Change the report item generating sequence.)


Generate all report items in this project to Word. This button will be disabled if there are no report items in Report Set.

13.2.6.2 Generating Report to Word

When all settings are finished you can use the rightmost button on Report Set Toolbar to generate report to Word for the current Report Set. At this time the program will ask you for the UUT data for report generation. If you wish to have the report of all UUTs to be generated in one Word file, you can uncheck the "Merge UUT(s) Add a new document per UUT".

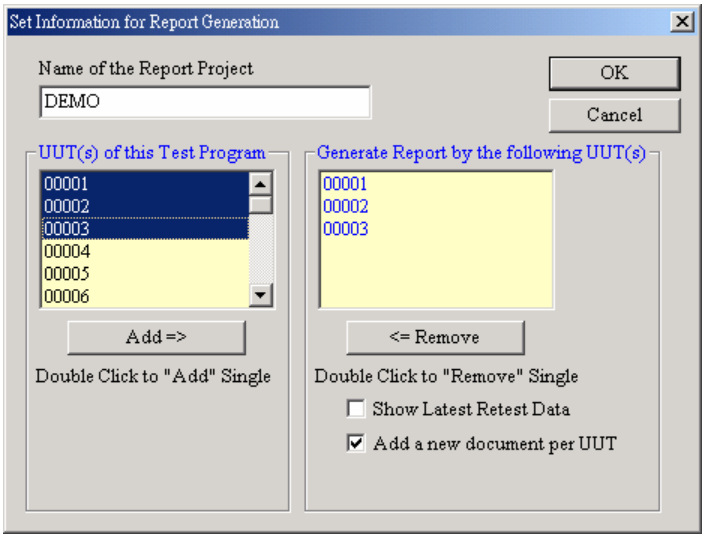


Figure 13-31 Setting Information for Report Generation

You can always use the Save function to save the unfinished Report Set or load an existing Report Set during setting.

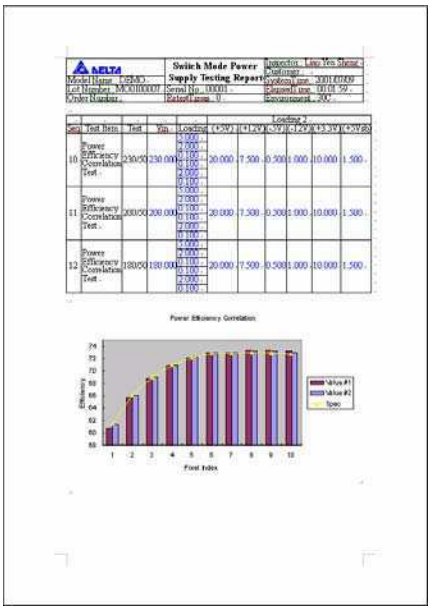
Notice:

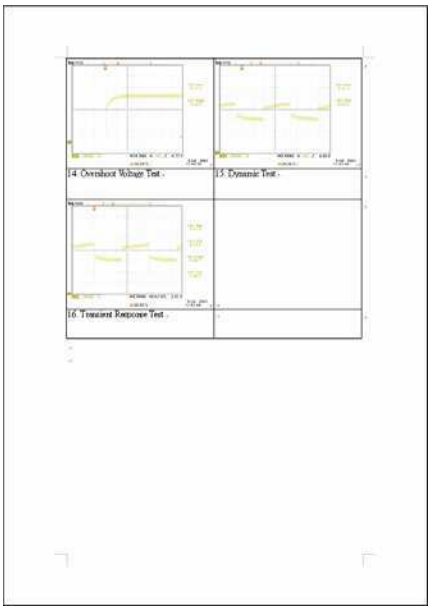
- The difference between saved Report Set and released Report Set is that the released Report Set can be added to the current Report Set (this means to add all report items to the released Report Set) but saved Report Set is unable to do that.

13.3 Report Wizard and Word

13.3.1 Execution Process

1. The program will open a new file to place the current report automatically every time a report is generated to Word.
2. Start transmitting the data
3. It switches to Word automatically for you to check the result of generated report.





Notice:

1. Please do not operate Word during data transmission, or it may interrupt data transmission. The transmission time depends on the data amount. It may take a few minutes. Please be patient for the completion message. The progress bar in the program will show you the report generation status.
2. This program will load Word to transmit report data when activated. It will not load again afterwards. Thus do not close Word before exiting the program, or the data would not be able to display. If you closed word accidentally, you can exit the program and rerun it to allow the program to load Word automatically.

13.3.2 Moving Picture/Changing Size

When the picture border appears, drag the picture to change the size. You can drag the picture to move it around.

13.3.3 Word Print Preview

It is better that you run Preview to make sure the printout meets your need. Please execute Word function menu by clicking **[File]→[Print Preview]**.

13.3.4 Setting Word Print Option

If the printout does not meet your needs, you need to set the Print options by executing Word function menu **[File]→[Page Setup]**.

- Orientation: If the print width exceeds the paper width, you can change the orientation to **Landscape**.
- Setting Margin: You can set the print margin to present the report in best shape.

14. On-line Control (Option)

SMPS ATS software ‘On-line Control’ is designed specially for developer. It integrates the system devices to simulate tests manually. It contains the following seven features.

- Performance and specification evaluation
- Test strategy verification
- Failure analysis
- UUT debugging
- Test Item debugging
- Test fixture debugging
- Test system familiarization

SMPS ATS software ‘On-line Control’ program executes the following actions.

1. Instrument Parameter Setting
   The On-line Control operating screen provides parameter setting for various instruments. After users entered the setting value, ‘On-line Control’ has to get the settings from input components, and then call the mapping Test Command to transfer the settings to instruments. ‘On-line Control’ must read the Setting table from each instrument in order to provide the setting screen for users and enable the action.

2. Measurement
   In the On-line Control operating screen, the instrument may be able to provide the readings once the user finishes a setting action. In order to let users get the instrument readings at any time, ‘On-line Control’ should use Timer to read the readings from instrument. As to what readings should be read, ’On-line Control’ should read the Reading table and its contents to add the read action to Timer reading process.

3. Graphs
   The graphs here include Reading Trend Graph, Setting and Reading Graph and Oscilloscope Waveform Graph, where the Oscilloscope Waveform Graph needs the base oscilloscope to support test commands.

14.1 Getting Started

As ‘On-line Control’ has mass Visual Components, it consumes large memory resources. The required memory will increase following the incremental of components. We suggest user’s computer to equip with 128MB RAM. Before executing ‘On-line Control’ program, and

close other unnecessary applications. The computer would appear different font size or hang when the memory is not enough.

In SMPS ATS software main menu, select **On-line Control** from Advance group, the program will show the source for selecting hardware configuration. If Test Program is selected, the screen will be prompted follow by window position and hardware parameter setting files. These files can be saved during exit. After the selection the program will follow the settings defined in the hardware configuration for various instrument devices to initialize the instruments. The progress bar in the middle shows the progress. It takes around 15 to 20 seconds. The more instruments the more time it takes.

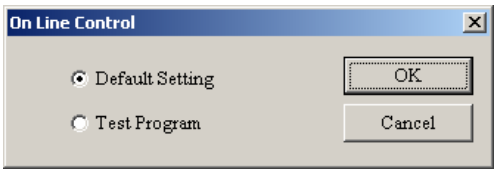


Figure 14-1 Selecting H/W Configuration Source

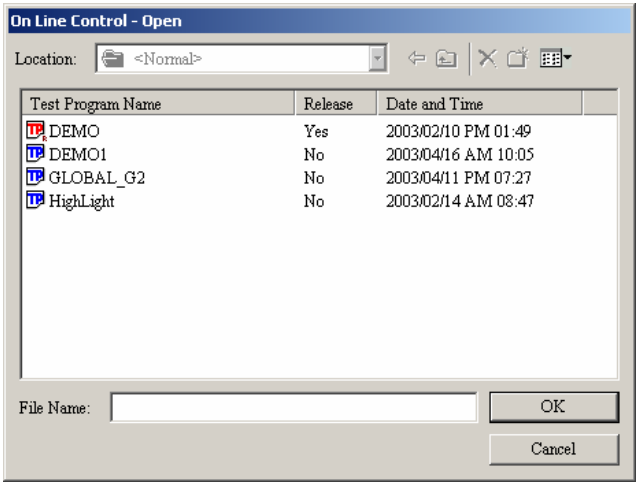


Figure 14-2 Selecting Test Program for H/W Configuration

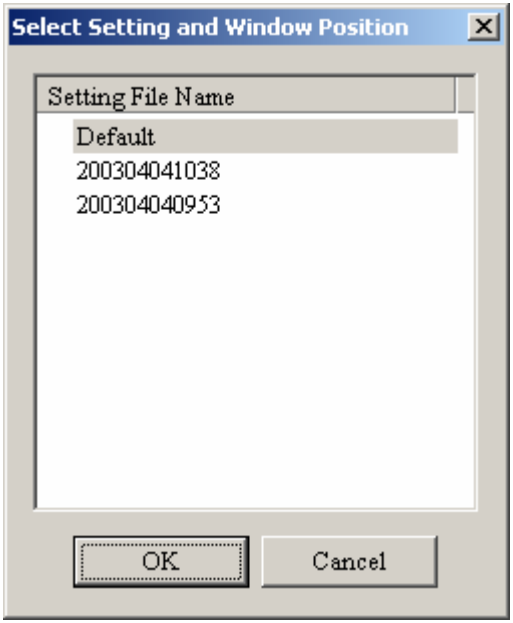


Figure 14-3 Selecting Setting and Window Position

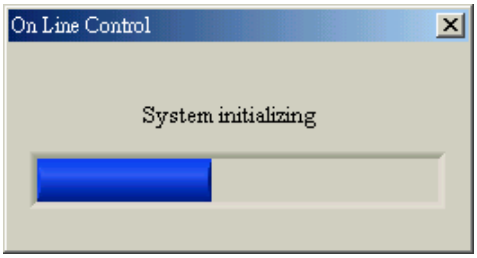


Figure 14-4 System Initializing Window

Latter it enters into 'On-line Control' main screen. The upper left window shows the Readings, and error messages are in the middle while the graph is at the bottom. The upper right window shows the parameter settings of various instruments with DSO waveform graph in beneath. The windows can be rearranged as you like.

The window size and position will change according to the resolution when the program executes. You can also adjust them. In 'On-line Control', the program will record down the size and position of each window for you before exit. Thus you don't need to adjust it again at next time.

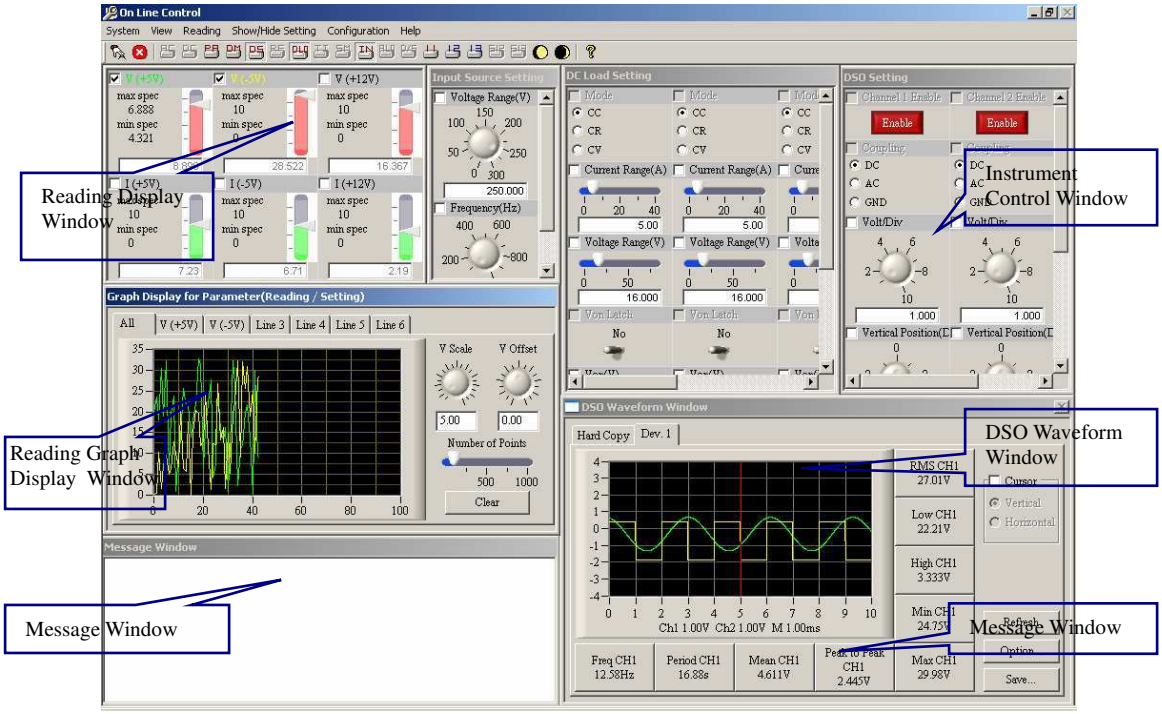


Figure 14-5 On-line Control Main Screen

14.2 Operating Environment

'On-line Control' changes the frequently used options in main menu to buttons on the toolbar, in which you will see all instrument buttons that are available for use in SMPS ATS software. If a button is disabled means the hardware configuration file does not have the instrument or no parameter is defined in the database for setting or reading the instrument. On the contrary if a button is enabled, it means the hardware configuration has the instrument and the database has the parameter for instrument setting or reading. If the button is down, it means the instrument setting window is on the screen. You can double-click the instrument button on the toolbar to move it on the top if other windows overlap it. Figure 14-5 On-line Control explains the windows associated with.

Reading Display Window

The Reading Display Window on the upper left window in Figure 14-5 is to display the measurement readings of various instruments. You can determine which instrument and what parameter to display. Also you can adjust the number of reading grids on the window dynamically.

Defining Reading Display Window Grid Numbers

The grids in the Reading Display Window mean the readings can be displayed. As the screen resolution is different from user's monitor, 'On-line Control' let user define the column and row numbers for grid. You can click **[Reading]→[Cell Number of Reading...]** to modify it.

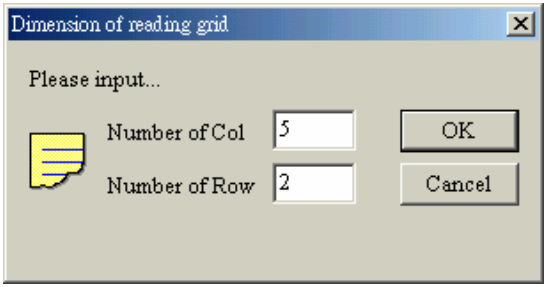


Figure 14-6 Reading Display Window Grid Setting Dialog Box

Instrument Control Window

The Instrument Control Window on the upper right window in Figure 14-5 is to adjust the settings of various instruments. You can determine which Instrument Control Window to display or not.

Reading Graph Display Window

The Reading Graph Display Window on the lower left window in Figure 14-5 is to display the parameter change trend through time in graph. You can select Check Box (☐) in the cell of Reading Display Window to display the parameter readings in graph. This window only allows for six readings, which means six curve lines on the screen at most. You can change the line color you like.

Changing Graph Display Window Line Color

You can click **[System]→[Graph Line Color...]** to modify it.

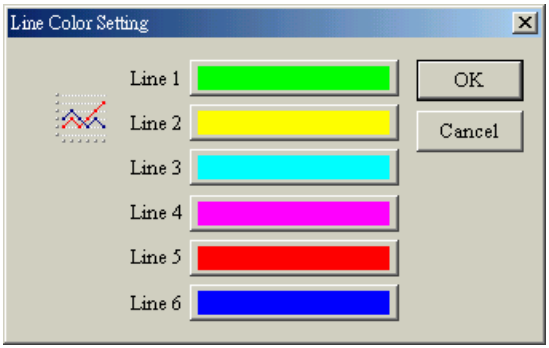


Figure 14-7 Line Color Setting Dialog Box

DSO Waveform Window

The DSO Waveform Window in the middle right window in Figure 14-5 is designed specially for Digital Storage Oscilloscope to capture its screen.

Message Window

The Message Window on the lower right window in Figure 14-5 is to display the current test command execution status and screen update information.

14.3 Setting Instrument Parameter

'On-line Control' program provides a single window for all parameters of an instrument. The window height and width are adjusted based on the parameters set for the instrument and Channel numbers. The window gets wider if there are more channels as the typical example of the Electronic Load instrument control window below.

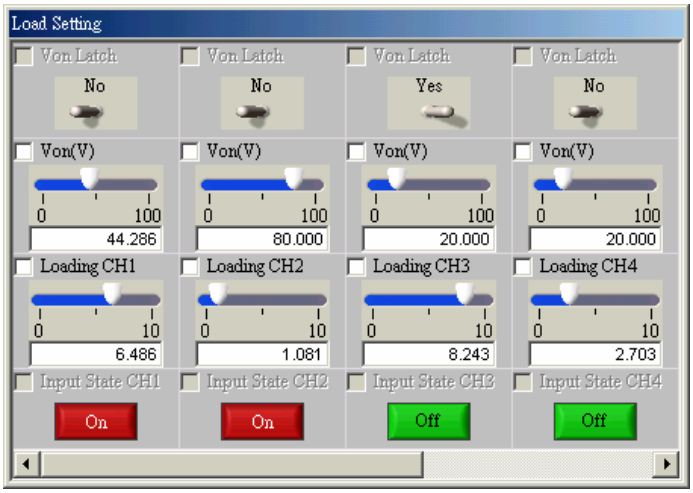


Figure 14-8 Instrument Control Window

You can click **[Configuration]→[*Device Name*]** to modify the number of parameters for display as the dialog box shown below.

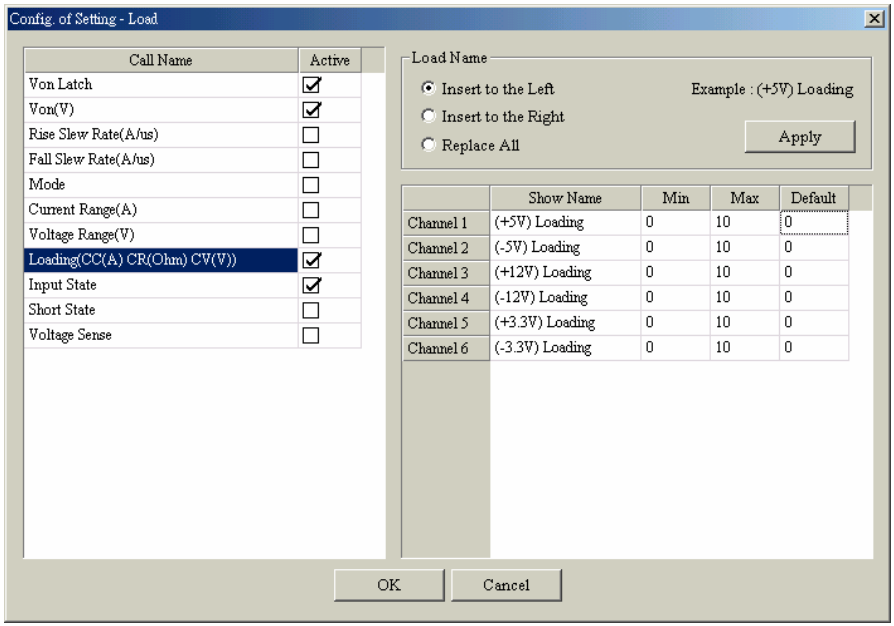


Figure 14-9 Instrument Parameter Setting Dialog Box

The Active column above the left table is for you to select the parameters. When you skip one row to another the channel information at the right table will change accordingly. You can modify the Channel Show Name and valid range as well as initial setting for each parameter. Click **OK** button to exit the dialog box after completed the modification. Every grid is a setting in Instrument Control Window. Above the grid displays the parameter Show Name while beneath is for you to input the interfaces that 'On-line Control' defines. There are five of them.

- Radio Box (for numbers under 4)
- Knob (for integral and floating point type, numbers are unlimited, non-Load)
- Slide (for integral and floating point type, numbers are limited, Load)
- Button (for Boolean type, On/Off)
- Combo Box (for numbers over 4)

What parameters for which components are defined in the database and not allowed for any modifications. Please contact our program designer for service if you wish to modify it.

When the program executes the first time, all settings in the Instrument Control Window are initial values. You can change them to the value you want but be careful not to exceed the valid range or the program will prompt error message and request you to re-enter it. After you changed the control components in the Instrument Control Window, the program will set the parameters checked at left column to the instrument.

The parameter maximum numbers allowed is defined in the database and not allowed for any modifications. Please contact our program designer for service if you wish to modify it.

14.4 Measurement

'On-line Control' puts all readings in one 'Readings Display Window'. As mentioned before you can modify the table column and row numbers for window grids. Before reading you can click **[Reading]→[Spec of Reading...]** to show Figure 14-10 dialog box as below.

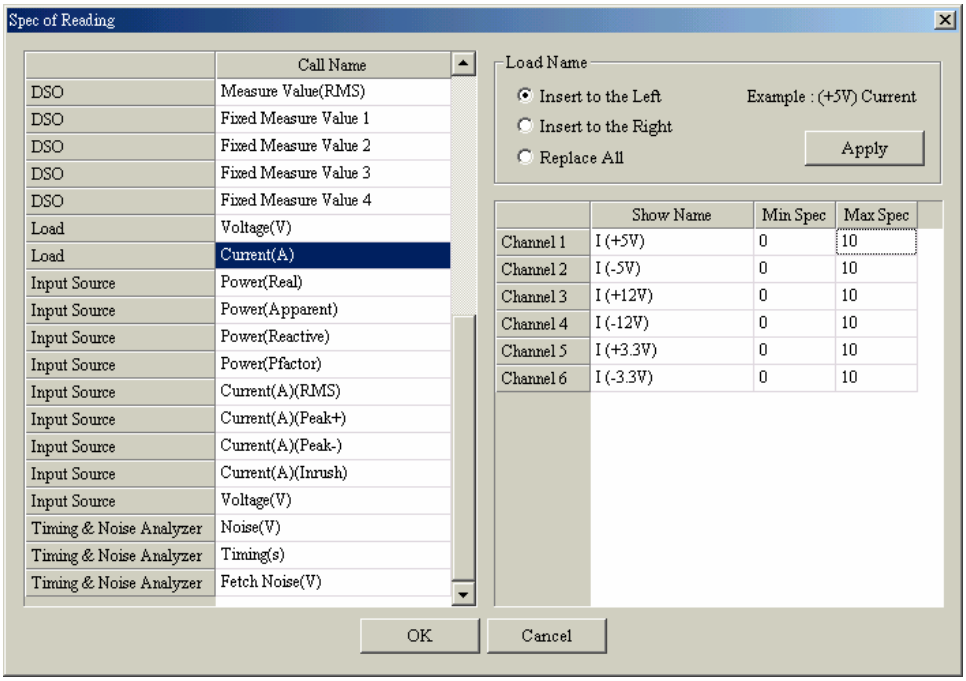


Figure 14-10 Spec for Reading Dialog Box

When the focus on left table skips to another row, the parameter information at the right table at right changes too. You can edit the Channel Show Name, minimum and maximum spec for reading. Click **OK** to exit the dialog box after completed the modification.

To add a reading to 'Readings Display Window', you can point to a blank grid and click the right mouse button to appear Figure 14-11 dialog box:

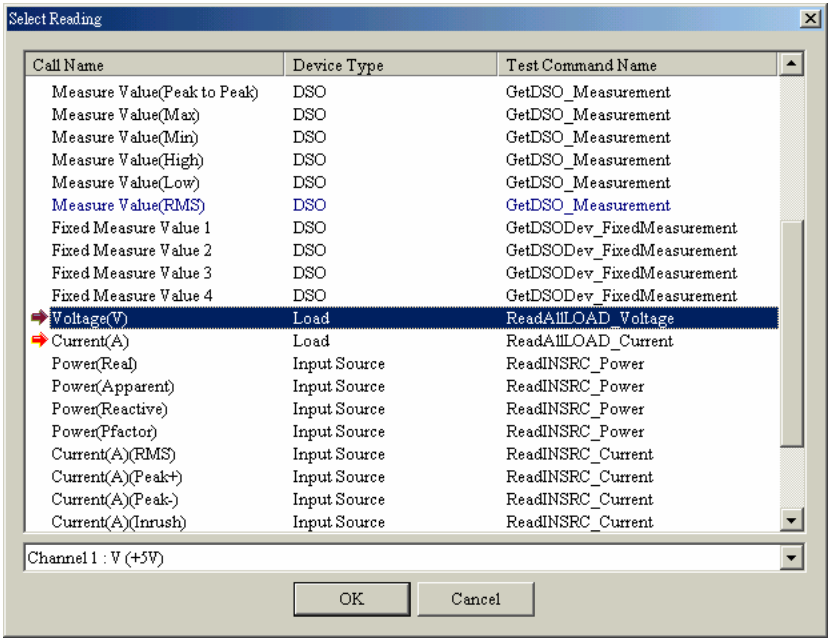
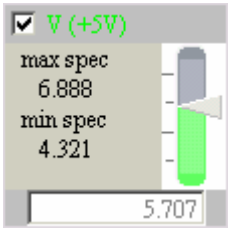


Figure 14-11 Selecting Instrument's Readings Dialog Box

If the parameter you selected has multiple channels, you need to pull down the Combo Box on the dialog box and select the Channel Show Name, then click **OK** to exit the dialog box. The selected parameter will appear on the grid where the mouse pointer is at as shown below.



Above the cell appears the parameter Show Name and the spec at left with a slider at right is in green if normal and turns to red if exceeds the reading specification. The lower part is an editor for displaying readings. When the program begins, all readings are '*' in the 'Readings Display Window' for all instruments. Once you change a control component value in Instrument Control Window', 'On-line Control' program will start the read action repeatedly at fixed time. The screen will update the readings periodically until you click **[Reading]→[Stop Reading]**.

To delete a reading from 'Readings Display Window', you need to move the mouse pointer to the Show Name of a window grid and click the right mouse button. The program will ask you if you are sure to delete it. Click **Yes(Y)** to confirm the deletion.

14.5 Graphs

'Readings Graph Display Window in Figure 14-12 is to show the parameter variation trend through time in graph curve line. You can select the Check Box (☐) in the cell of 'Reading Display Window' to show the parameter readings in curve line graph.

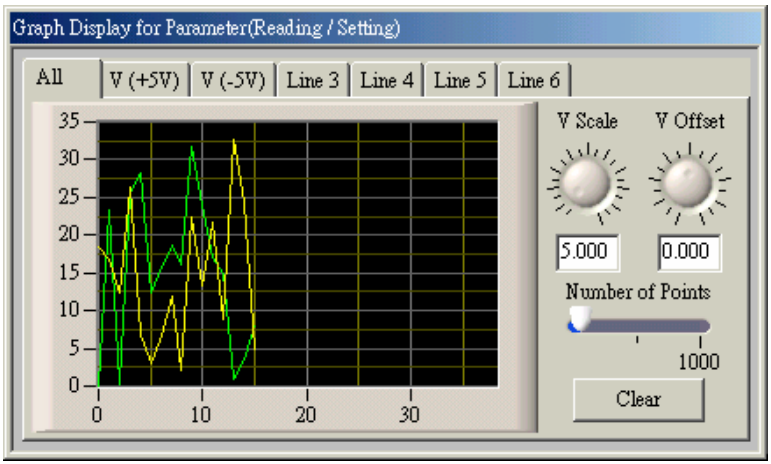


Figure 14-12 Readings Graph Display Window

The window left part is a screen, which contains three components.

- V Scale
  To adjust the scale unit vertically.
- V Offset
  To adjust the 0 scale offset vertically.
- Number of Points
  To adjust the number of dots for display horizontally.

No matter it is the instrument setting or readings, if the check box on the left of Show Name is enabled, you can check the parameters for curve lines drawing, which are six maximum. Once you change a component value in 'Instrument Control Window', 'On-line Control' program will draw the parameter reading in curve line graph in the window. You can compare the differences and relationship among various parameters.

14.6 Capturing DSO Waveform Graph

SMPS ATS software's 'On-line Control' is designed specially for capturing the waveform from Digital Storage Oscilloscope (DSO), so that you can see it on computer screen directly as Figure 14-13 shows.

If you set several DSOs in 'H/W Configuration', Figure 14-13 will show Device 1, Device 2,…, Device *n* options to indicate that the waveform showed is for which DSO.

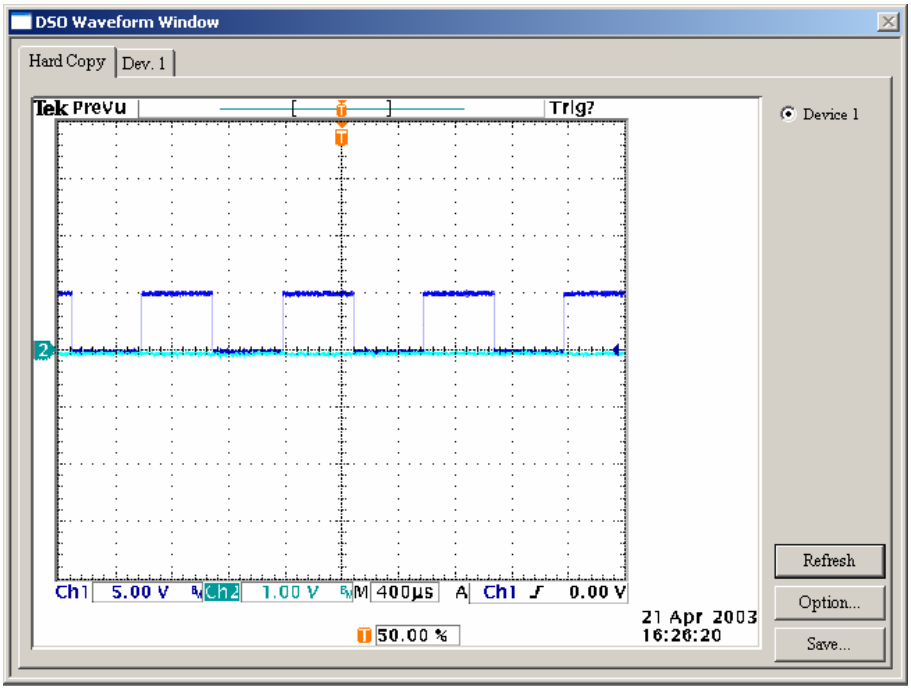


Figure 14-13 DSO Waveform Window

You can click **Refresh** button in Figure 14-13 to refresh the screen for the specified DSO. Click **Option…** to select refreshing the screen manually by clicking **Refresh** or changing the screen continuously. Click **Save…** to save the screen to the specified path in hard disk. It supports BMP and JPG formats.

Besides capturing the DSO screen, it also supports waveform graph mode. The 3 buttons at lower right are same as described previously. There are 9 reading functions and Channel waveform type for selection in Option. Right click the 9 readings will appear a reading window. Once the setting is done, the readings can be retrieved continuously. To disable it

right click it again. The Cursor function at upper right corner is same as DSO. Vertical or Horizontal measurement as well as different channel switch can be set. When Cursor is selected it can be drag and drop to the specified position.

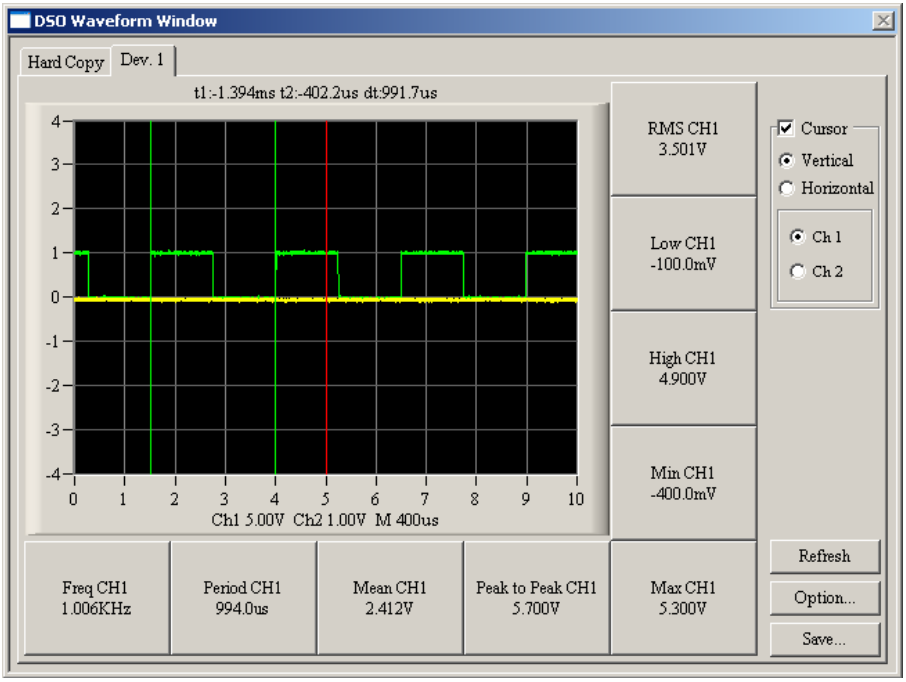


Figure 14-14 DSO Waveform Graph Window

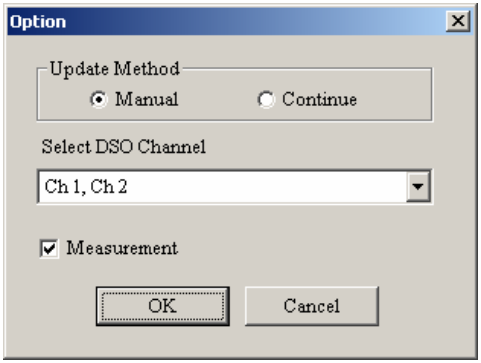


Figure 14-15 Selecting DSO Waveform Update Method

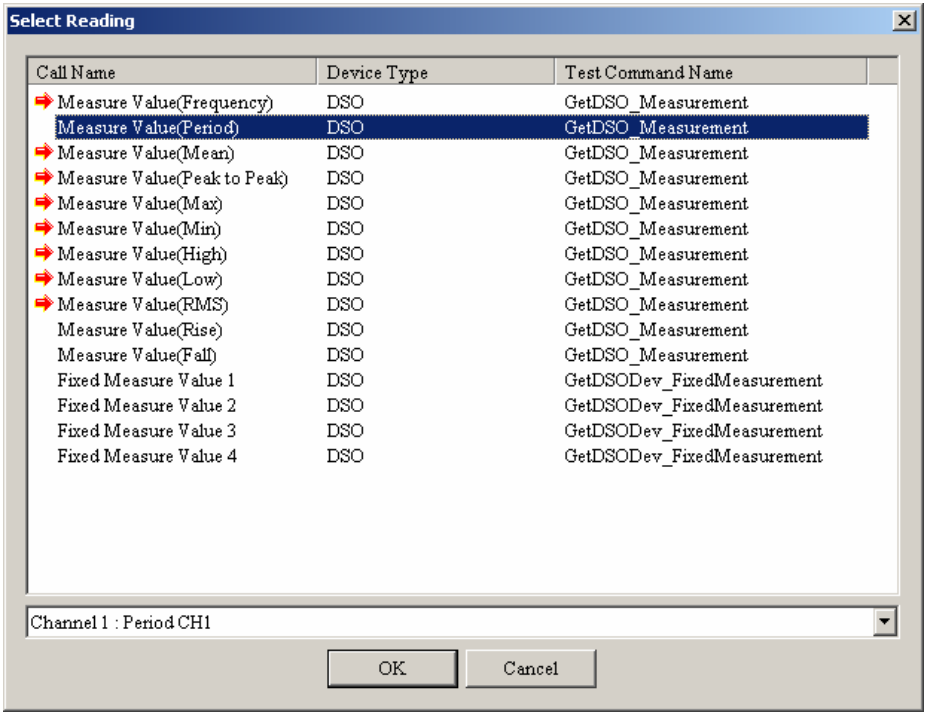


Figure 14-16 DSO Reading Dialog Box

14.7 Menu Description

[System]→[Pre. Setting Conf...]	Select the setting values for instrument before the program enters into main menu.
[System]→[Miscellaneous Test Command...]	Send commands without any parameters to instrument.
[System]→[Load Name...]	Edit each output terminal name of Load instruments of which for menu display only.
[System]→[Graph Line Color...]	Define the pen color for Graphic Display Window.
[System]→[Reset Setting and Reading]	Clear the settings and readings on the menu of all window components and return to the instrument initial state.
[System]→[Save]	Select if saving the current setting and window position.

[System]→[Exit]	Exit the program and return to SMPS ATS software main menu.
[View]→[Toolbar]	Display/Hide Toolbar.
[View]→[Message Window]	Display/Hide test command message window.
[View]→[Former Window Position…]	Read the window position and size of a certain previous window.
[View]→[Reset Position and Size]	Reset the position and size of each window to its default.
[Reading]→[Cell Number of Reading...]	Set the cell number of 'Reading Display Window'.
[Reading]→[Spec of Reading...]	Edit the Show Name, Min Spec and Max Spec of each instrument reading.
[Reading]→[Go]	Start to read the instrument state periodically.
[Reading]→[Stop Reading]	Stop to read the instrument state periodically.
[Show/Hide Setting]→[*Device Name*]	Display/Hide an instrument (ex, AC Source, DC Source and Load) control window.
[Show/Hide Setting]→[Show All]	Display all Instrument Control Windows.
[Show/Hide Setting]→[Hide All]	Hide all Instrument Control Windows.
[Configuration]→[*Device Name*]	Specify if display the setting for an instrument.
[Help]→[Contents]	Display the table of contents for the online documentation.
[Help]→[About On-line Control…]	Display the version information of this program.

Appendix A Test Result Log File

All test result log files are in SMPS ATS software working directory under Log subdirectory. Every test program has its log file directory and contents. So all logs are divided by test program.

Assuming the test program named “MyPrg.prg”, a subdirectory named MyPrg will be created under Log directory. This subdirectory logs the test results the test program executed. Here two types of *Microsoft Access* database files (.mdb) are defined, TestInfo.mdb and MyPrg@*yyyymmdd*.mdb, where *yyyy* is for western year, *mm* is for month, *dd* is for date. The table contents are described as follows.

1. TestInfo.mdb: Log testes UUT serial number, including two tables {UUTRetest} and {TPInfo} as listed below.

{UUTRetest} data table: Serial number for tested UUT and times for retest.

SerialNo	Text for UUT’s serial number.
RetestTime	Data and time of the test.
Times	Integer for the number of times the UUT tested, "0" means the first test, "1" means the first retest.

{TPInfo} data table: Test program information.

Key	Text for name.
Value	Text for content.

Following are the definition of logs.

Key	Value
TPFileName	The name of test program.
TPFilePath	The directory for saving test program.
Author	The author of test program.
Comment	The comment for test program.
ReportFile	The report format file for test program.
ModelName	The Model name for test program.
LoadNum	The Load number set by test program.
Load1	The name for the first Load.
Load2	The name for the second Load.
…	

MajorVer	The major version number of test program.
MinorVer	The minor version number of test program.
DateTime	The time generated by test program (20000304171256 means year 2000 March 4th 17:12:56)
PreSeqNum	The total number of PreTest sequences in test program.
PreSeq1	The name of the first PreTest sequence.
PreSeqExt 1	The description of the first PreTest.
…	Add by the number of PreSeqNum.
PostSeqNum	The total number of PostTest sequences in test program.
PostSeq1	The first name of PostTest sequence.
PostSeqExt1	The description of the first PostTest sequence.
…	Add by the number of PostSeqNum.
SeqNum	The total number of UUT Test sequences in test program.
Seq1	The first name of UUT Test sequence.
SeqExt1	The description of the first UUT Test sequence.
…	Add by the number of SeqNum.

2. MyPrg@20000531.mdb (for example): The database to log test result of everyday in different log files by date. There are seven data tables: {SPCLogData} , {SPCLogDataBinary} , {SPCSpec} , {SPCSpecBinary} , {SPCVar} , {HeaderInfoSet} and{SPCVectorGlobal} as explained below.

{SPCLogData} data table: Save numeric type values of everyday test result as explained below.

SerialNo	Text for UUT serial number.
VarID	Long integer for variable sequential number defined by 'Execution Controller' following the Test Program.
Value	Numerical readings.
Result	Byte (number),"0" is Fail and "1" is Pass.
RetestTimes	Integer for the retest times, the index value in index database TestInfo.mdb{UUTRetest} .
RunStep	Integer for the execution step.

{SPCLogDataBinary} data table: Save nonnumeric type values of everyday test result as explained below.

SerialNo	Text for UUT serial number.
VarID	Long integer for variable sequential number defined by 'Execution Controller' following TestProgram.
Value	Binary value for the content is decided by parameter type.
Result	Byte (number),"0" is Fail and "1" is Pass.

RetestTimes	Integer for the retest times, the index value in index database TestInfo.mdb{UUTRetest} .
RunStep	Integer for the execution step.

{SPCSpec} data table: To log the input parameter numeric value (mainly for spec.) As the input parameter will not change during execution, so it is logged into data table. The various columns are described as below.

SeqNo	Number for the sequential number of test item in test program starting from ”0”.
TestItemName	Text for the name of test item.
LoadNo	Number for Element Index, the variable is 0 if not Array related.
CallName	Text of the Call Name for input parameter.
Value	Number for numeric value of parameter.
DataType	Number for variable type.
DataFlag	Number for variable type. Following Bit to decide the state. 0x01**:** Fail, 0x02**:** Invalid, 0x04**:** Less, 0x08**:**Greater, 0x10**:**Don’t care.
Remark	Reminder, which is not used.

{SPCSpecBinary} data table: To log the input parameter nonnumeric value (mainly for spec.) As the input parameter will not change during execution, so it is logged into data table. The various columns are described as below.

SeqNo	Number for the sequential number of test item in test program starting from ”0”.
TestItemName	Text for the name of test item.
LoadNo	Number for Element Index, the variable is 0 if not Array related.
CallName	Text of the Call Name for input parameter.
Value	Binary value for the content is decided by parameter type.
DataType	Number for variable type.
DataFlag	Number for variable type. Following Bit to decide the state. 0x01**:** Fail, 0x02**:** Invalid, 0x04**:** Less, 0x08**:** Greater, 0x10**:** Don’t care.
Remark	Reminder, which is not used.

{SPCVar} data table: To log all reading variables related information. This data table is in fact a variable mapping table. Before inquiring the test result, you should cross check the variable information for its sequential number and use it to inquire the variable numeric value in MyPrg@19991101.mdb (for example). The columns are described below.

VarID	Number for unique variable sequential number defined by 'Execution Controller' following the Test Program.
SeqNo	Number for the sequential number of test item in test program starting from "0".
LoadNo	Number for Element Index, the variable is 0 if not Array related.
TestItemName	Text for the name for test item.
CallName	Text of the Call Name for input parameter.
MaxSpec	Text for the reading maximum spec maps to the input parameter Call Name.
MinSpec	Text for the reading minimum spec maps to the input parameter Call Name.
DataType	Number for variable type.
Remark	Reminder, which is not used.

{HeaderInfoSet} data table: To log the UUT information.

SerialNo	Text for the UUT serial number.
ModelName	Text for the UUT model name.
LotNumber	Text for the UUT lot number.
OrderNumber	Text for the order number.
Environment	Text for the environment temperature during test.
Inspector	Text for the name of inspector.
Customer	Text for the name of customer.
ElapsedTime	Text for the time testing spends.
SystemTime	Text for the system time during test.
RetestTimes	Integer for retest times. It is the index value for index database (Retest.mdb).

{SPCVectorGlobal} data table: To log the Global and Vector contents during test.

Type	Number for variable type, 19:Global, 20~29 are Vector. Others not defined.
Index	Number for Vector: The Element number of the Vector. Global: Define Global variable sequence (0~5). (System/User)*(Pre/UUT/Post).
IndexName	Number for Vector: Vector name. Global: "Global" string.
CallName	Text for the name of variable.
LoadNo	Number for Element Index, the variable is 0 if not Array related.
Value	Number for value.
Remark	Reminder, which is not used.

Appendix B Contact Chroma

For your convenience, this appendix contains a form for you to log the problems you found when operating the product or any comments in using this manual that can help us solve the technical problems in the future. Please copy and fill in the Quality Process form before mailing it to us. Your help is highly appreciated.

You can contact us via the phone and fax numbers listed below or mail it to the following address.

CHROMA ATE INC.
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Kuei-Shan Hsiang, Taoyuan Hsien, Taiwan
Tel: 886-3-327-9999
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Chroma's Continuous Quality Process
READER COMMENTS
(Fax this form to 886-3-327-2886)

Chroma welcomes all comments and recommendations to improve future editions of this publication.

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