Chroma

High Power DC Electronic Load

63200 Series

Soft Panel User's Manual

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63200 Series
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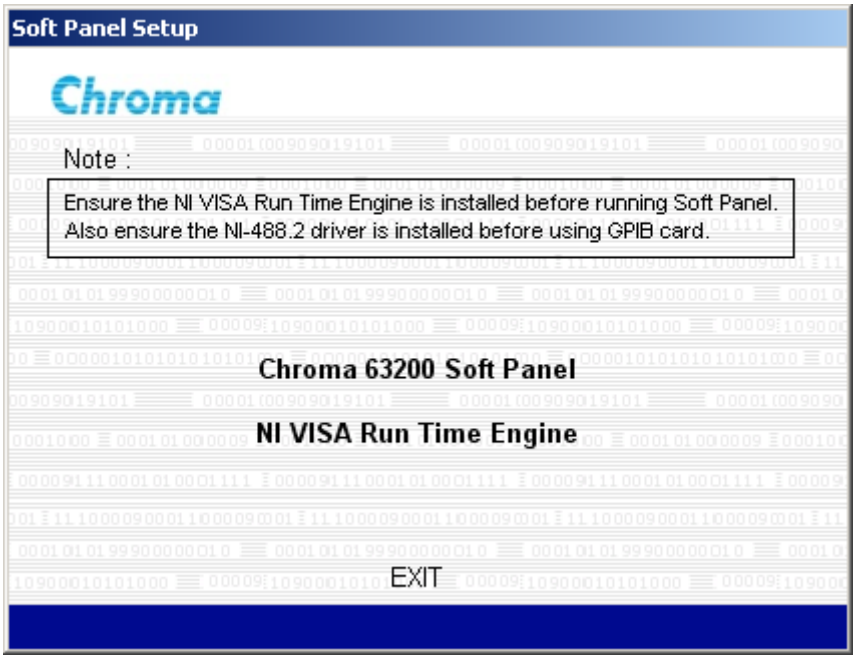

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Revision History

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

Date	Version	Revised Sections
Sep. 2006	1.0	Complete this manual
Aug. 2012	1.1	Add “Disclaimer and Intellectual Property Rights Statements” Modify the installation steps in “*Installing Chroma 63200 Soft Panel*” and “*Installing NI VISA Runtime*” in the chapter of “*Installation*”.

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1. System Structure

This chapter explains the structure and functions of Chroma DC Load 63200 Series Soft Panel application. The supported instruments and communication interfaces are listed below for users to identify the required environment easily.

1.1 Introduction

This software is applicable to Chroma DC Load 63200 Series instruments only. The remote transmission between PC and DC Load must be active before using the software in order to communicate by commands.

The software application can perform internal parameter settings for DC Load and monitor the output measurement. In addition the software is able to save the parameter settings so that users can open an existing file for execution from hard disk easily.

1.2 Supported Hardware

Chroma 63200 Series Programmable DC Electronic Load contain the following models:

A. 63201
B. 63202
C. 63203
D. 63204
E. 63205
F. 63206
G. 63207
H. 63208
I. 63209
J. 63210

1.3 Communication Interface

There are two types of communication interfaces between PC and DC Loads:

A. GPIB
B. RS232 (Cross)

1.4 Operation

It is recommended to work through the Soft Panel by clicking the mouse for operation.

1.5 Software and Hardware Requirements

The Soft Panel program is quite large; therefore, the following PC software and hardware environments are suggested.

- Intel CPU 500MHz or above
- Microsoft Windows 98 (second edition), 2000 or XP
- 400 MB hard disk space at least
- 64 MB memory at least
- VGA or SVGA color monitor
- PS2 mouse

2. Installation

First install the Chroma DC Load 63200 Soft Panel to the hard disk on PC before using it. This chapter describes how to install the software on Windows step by step.

- Ensure there is at least 40 MB or above hard disk space on PC.
- Insert the first floppy disk of Chroma DC Load 63200 Soft Panel to the 3.5” disk drive, or place the software CD into the CD drive.

2.1 Files in CD

The CD contains the files shown in Figure 2-1.

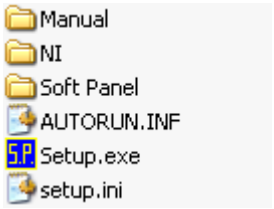


Figure 2-1 Files in CD

2.2 Installing Chroma 63200 Soft Panel

Place CD in the CD drive and it will execute “`Setup.exe`” in the CD to start the installation wizard as Figure 2-2 shows. Execute it manually if it is not running automatically.

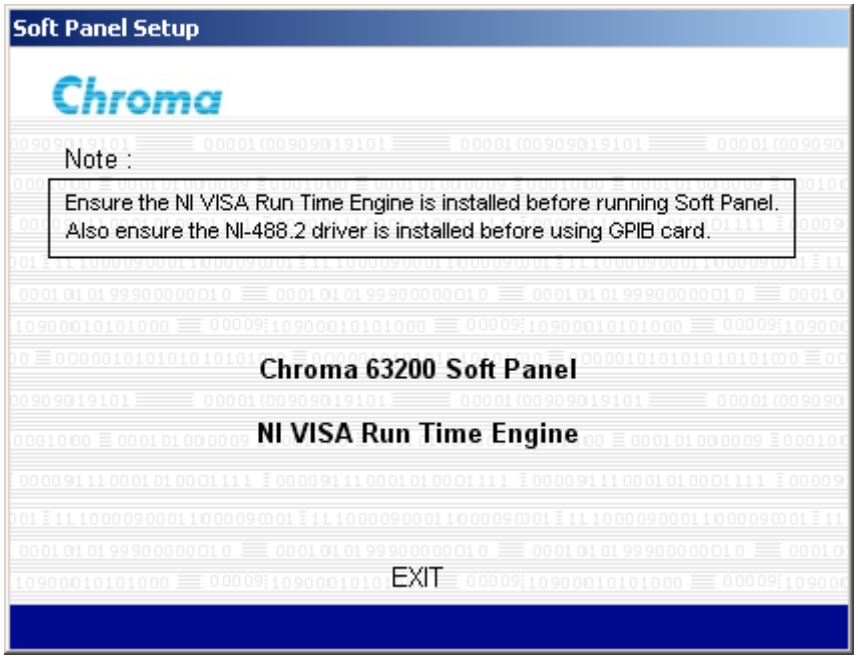


Figure 2-2 Soft Panel Setup Screen

Step 1

Click **Chroma 63200 Soft Panel** and it prompts the window as Figure 2-3 shows. Click **Next** to carry on the procedure.

Figure 2-3 Chroma 63200 Soft Panel Installation Screen

Step 2

The program is default installed in `C:\Program Files` directory as Figure 2-4shows. To change it, click **Browse** and specify the path for installation. Click **Next** to proceed.

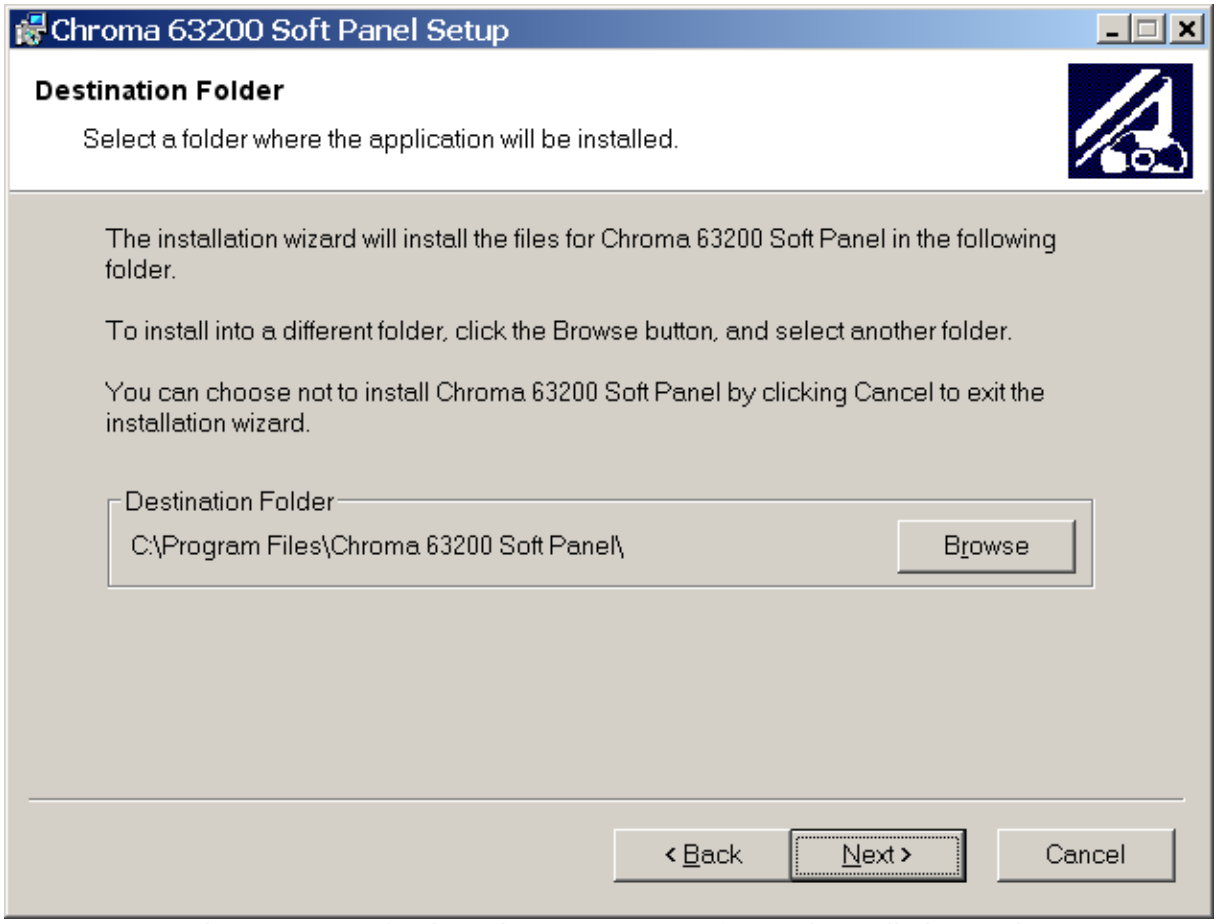


Figure 2-4 Selecting Chroma 63200 Soft Panel Installation Path

It is ready to begin the installation. Click **Next** to go on.

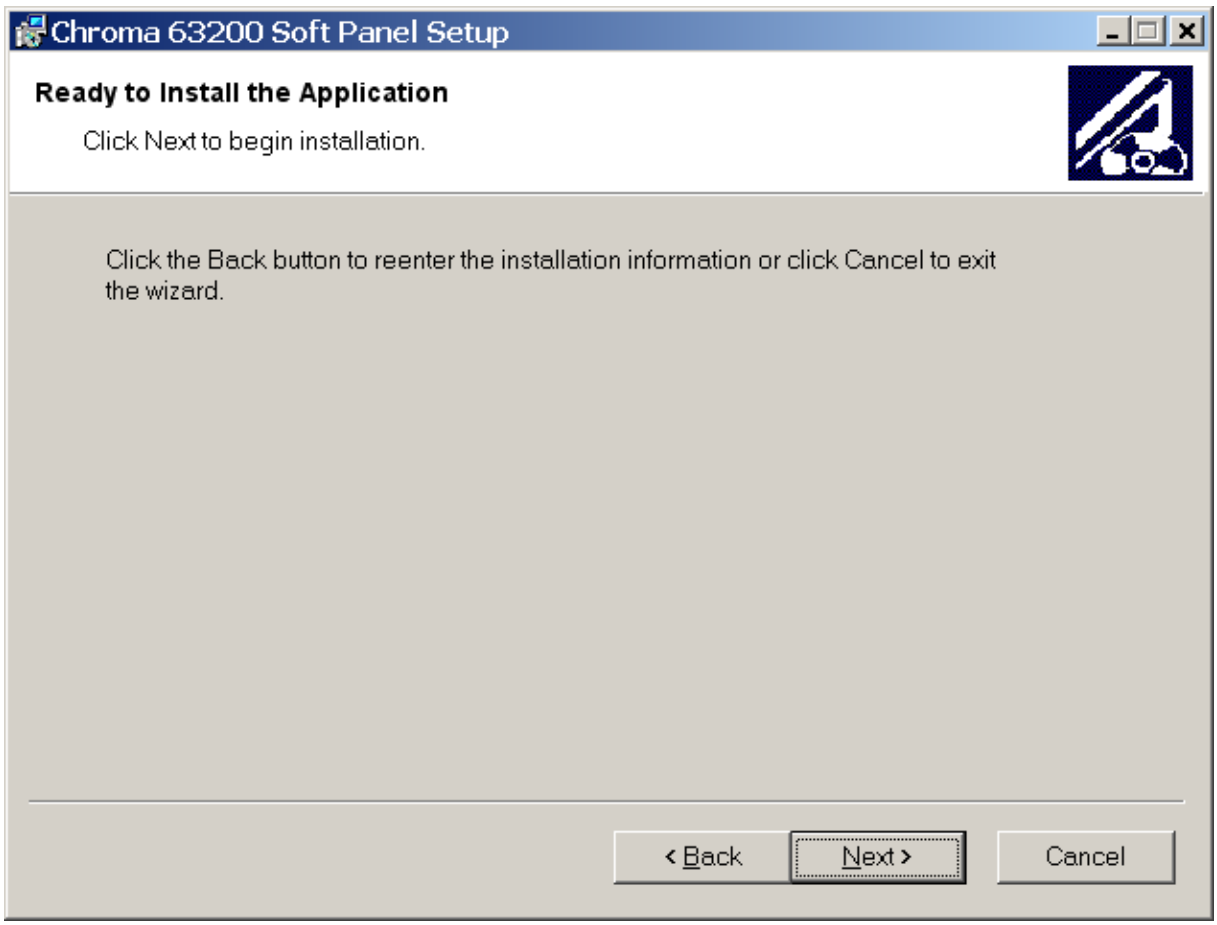


Figure 2-5 Screen of Ready to Install the Application

Click **Cancel** to stop the installation if any mistake is found during installation.

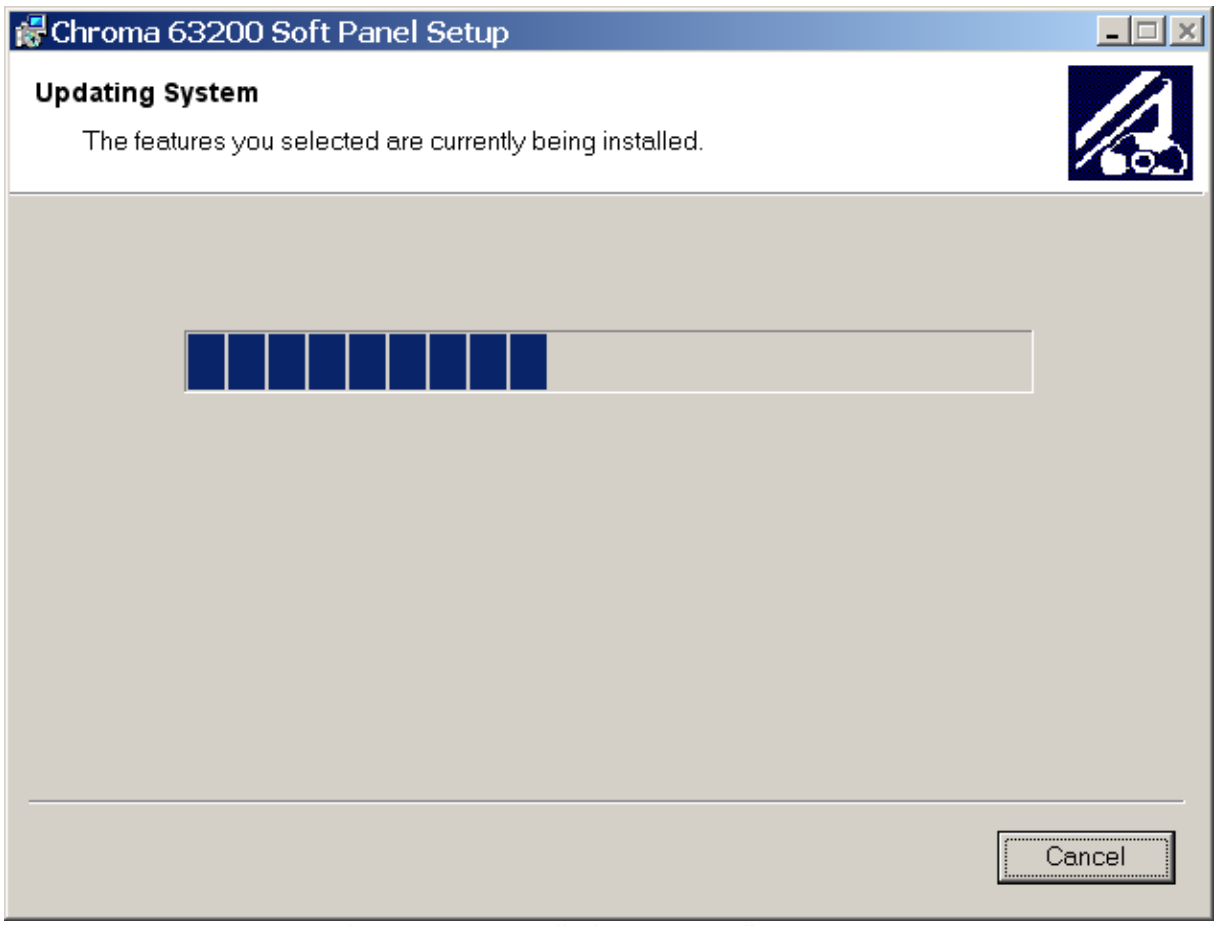


Figure 2-6 Installation Proceeding Screen

Figure 2-6 prompts once the installation is completed. Click **Finish** to end the program without restart the PC.

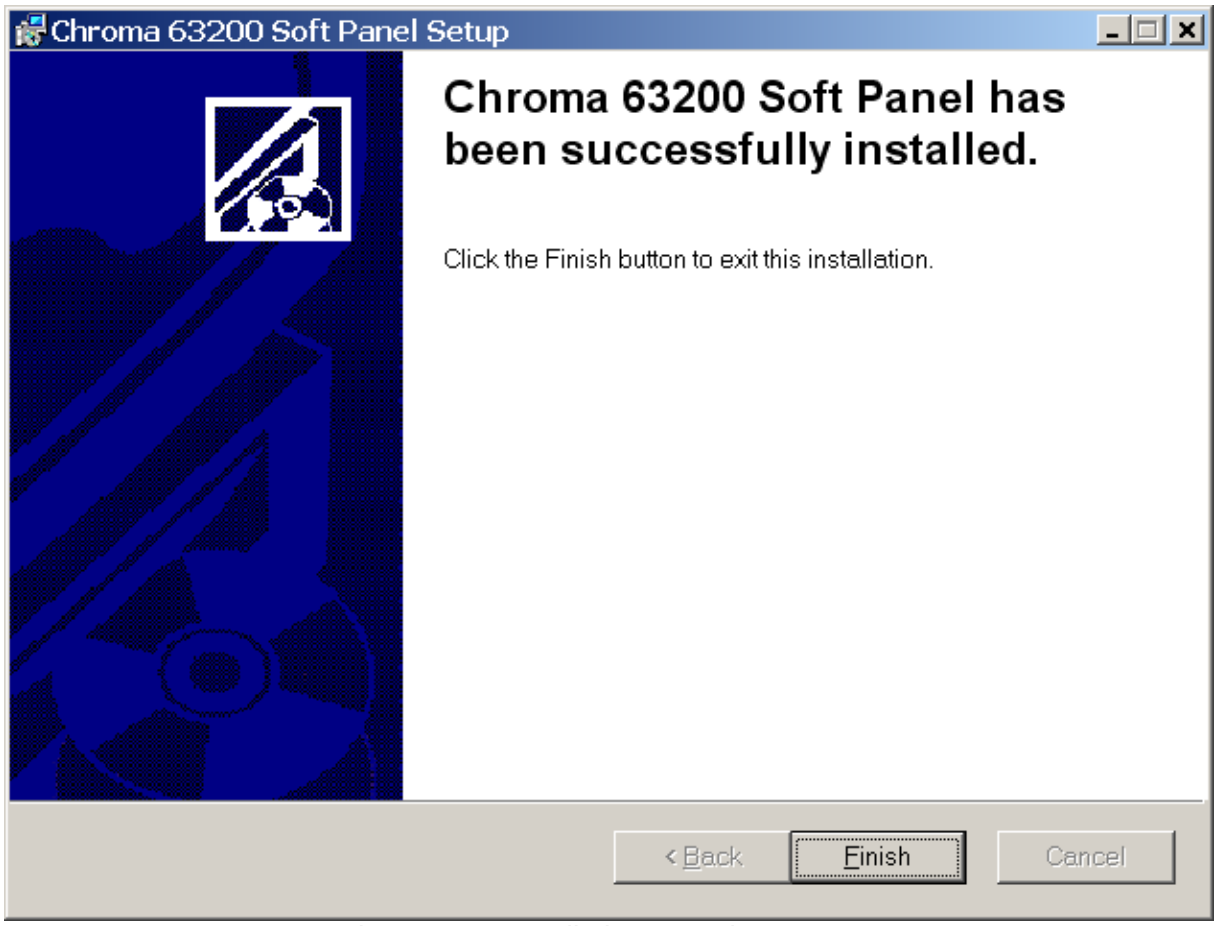


Figure 2-7 Installation Complete Screen

2.3 Installing NI VISA Runtime

The Soft Panel installation disk has NI VISA Run Time Engine 3.0 and 4.1 (default installation version) placed in NI directory. Though these two versions are tested valid by Chroma, the user still can follow the Operating System installed to select the suitable VISA version. Other related information, see the web side http://www.ni.com/support/zht/. Please ignore this section if NI VISA Run Time Engine driver has been installed.

Step 1

To install NI VISA 4.1 driver, click **NI VISA Run Time Engine** in Figure 2-2 and after the program is initialized, it will prompt the installation as Figure 2-8 shows.

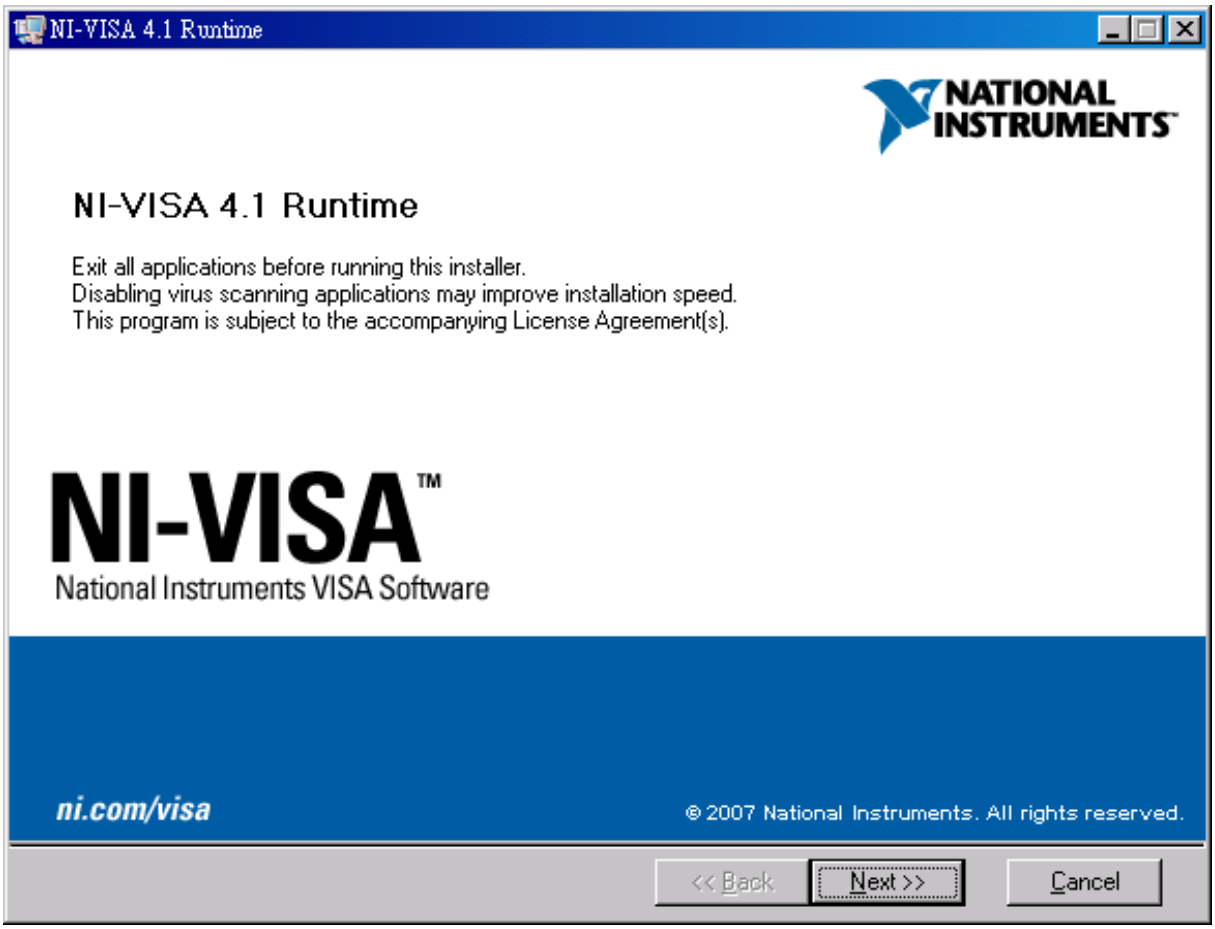


Figure 2-8 Installation Screen of NI VISA Ver. 4.1 Driver

Step 2

It is suggested to end the other running applications first, and then click **Next** to start the installation. It will enter into the next installation procedure to ask the user for installation path as Figure 2-9 shows.

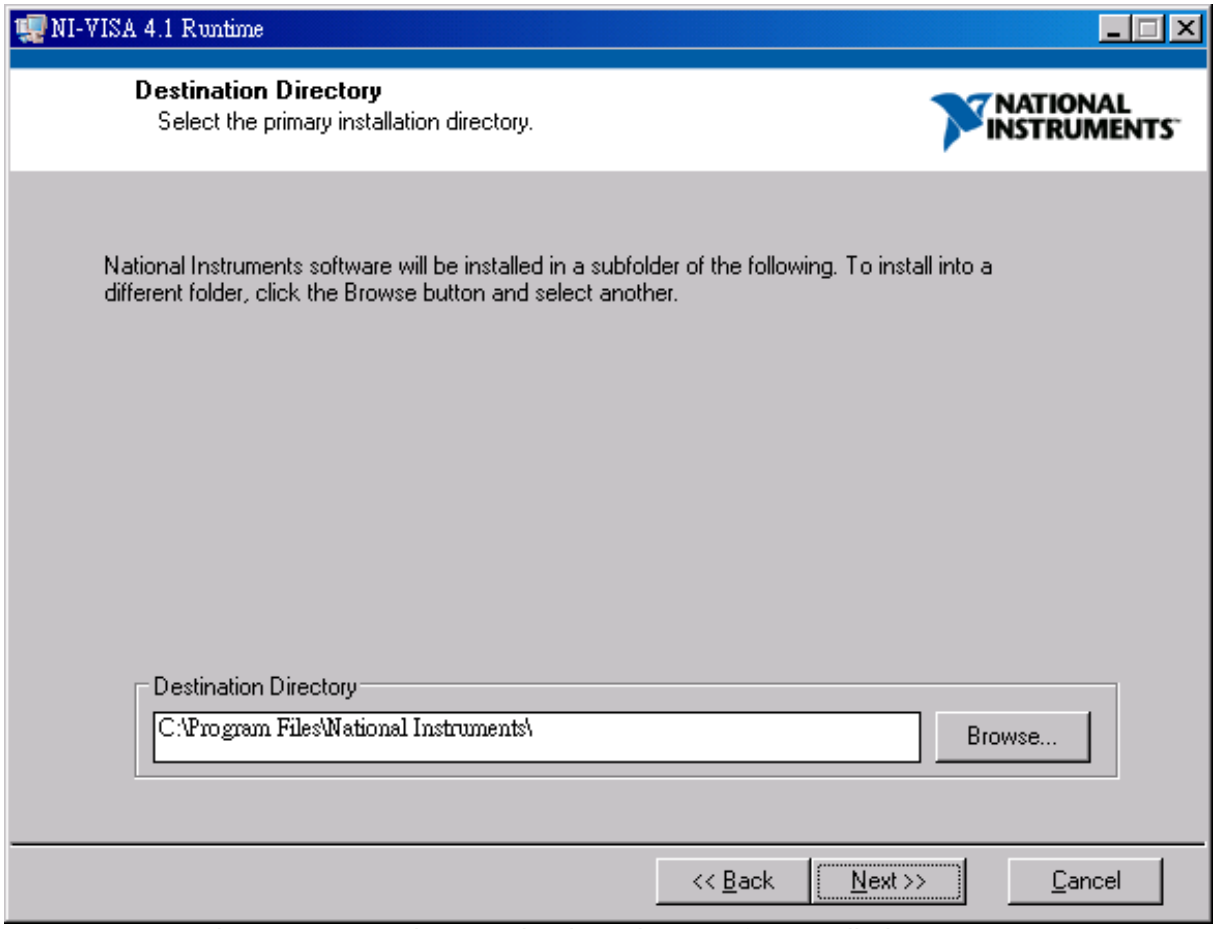


Figure 2-9 Setting Destination Directory for Installation

Step 3

Follow the prompt message to click **Next** and complete the installation procedure as Figure 2-10 shows.

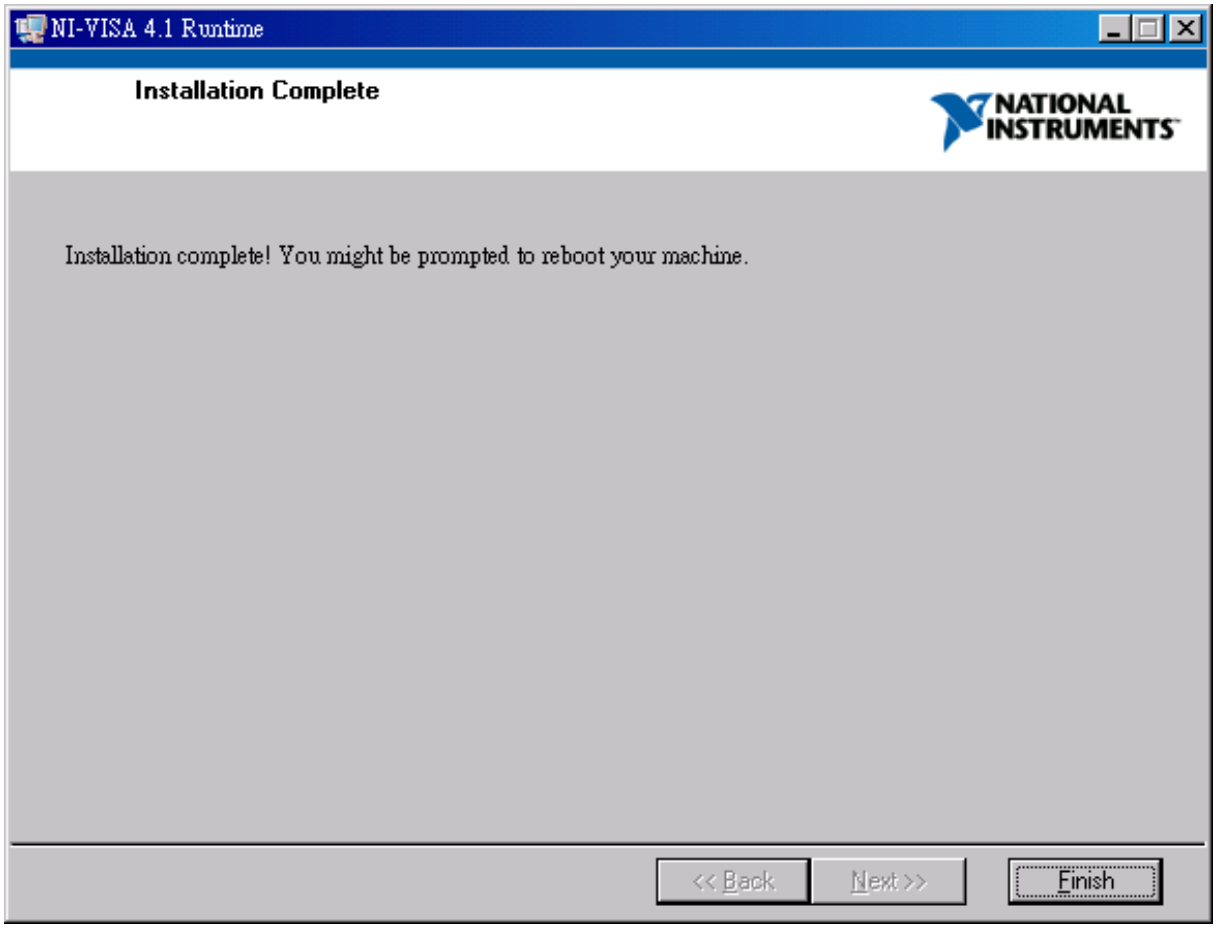


Figure 2-10 Screen of Installation Complete

Whenever the Operating System is updated, the supported NI VISA driver has to be updated as well. Please see the web side http://www.ni.com/support/zht/ to see the associated link for download.

2.4 Installing GPIB Interface Driver

Follow the steps listed in the user's manual of GPIB Interface Driver for installation. There is no need to install this driver if RS232 interface is in use.

2.5 Uninstalling Chroma DC Load 63200 Soft Panel

To remove the Chroma 63200 Soft Panel application, it is suggested to click **Start** → **Settings** → **Control Panel** → **Add/Remove Programs** to uninstall the related items.

3. Starting Chroma DC Load 63200 Soft Panel

3.1 Starting

After the installation is done, click **Start\Programs**\`Chroma 63200 Soft Panel` will prompt the start screen as Figure 3-1 shows.

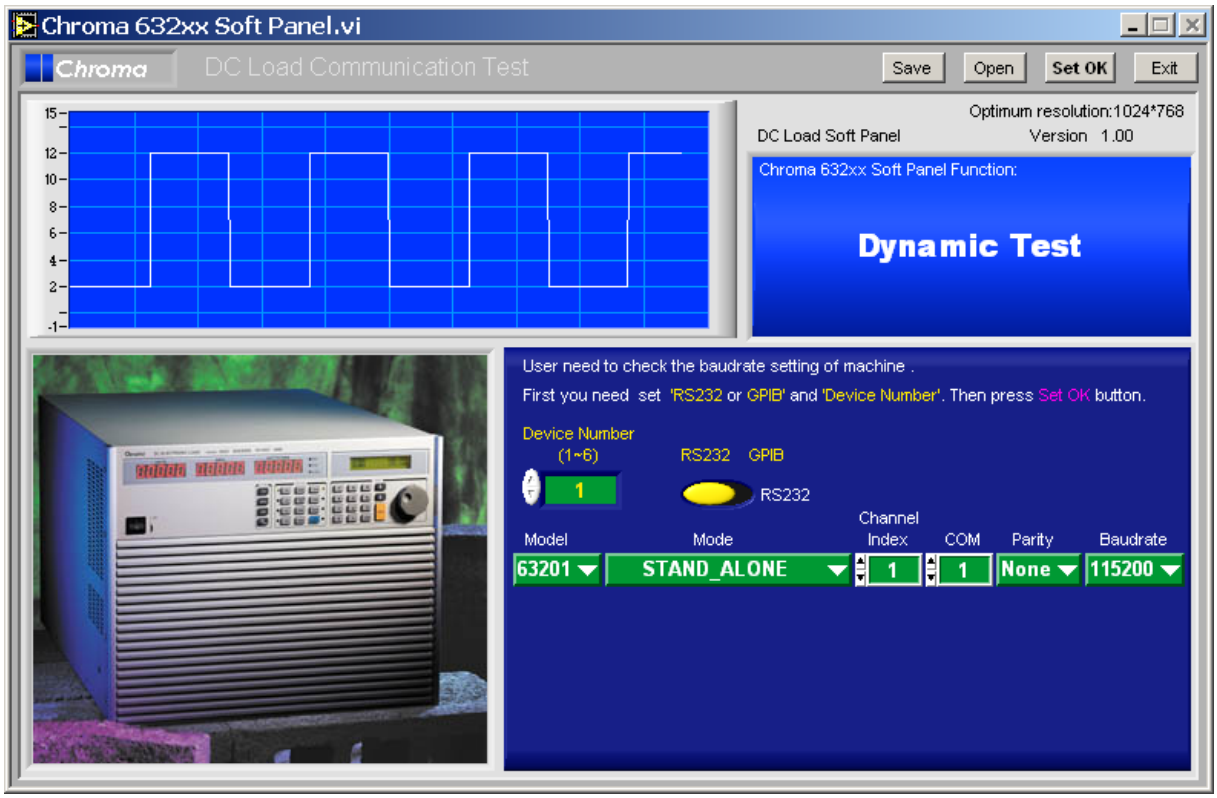


Figure 3-1 Start Screen of Chroma DC Load 63200 Soft Panel

Description:

a. When entering into Chroma DC Load 63200 Soft Panel users need to specify how many devices will be used and their communication protocols. The Soft Panel is capable of controlling up to 6 devices at present.

Figure 3-2 Setting the Number of Devices to be Connected

b. Users must determine the communication protocol used that is the transmission commands between PC and instrument devices. GPIB or RS232 are the current applicable protocols for control. The mapping parameters will appear when one is selected, for instance the GPIB Address will appear when GPIB is selected and COM, Parity & Baudrate will show up when RS232 is chosen. Please be noted

that when RS232 is selected as the communication interface, the DATA LENGTH of instrument has to set to 8bit and the STOP BIT has to set to 1bit or it won't be on-line correctly.

Figure 3-3 Setting the Communication Interface

c. Set the communication interface parameters same as the one on instrument. For example, the GPIB Address on instrument is set to 5 then the GPIB Address on Soft Panel has to be set to 5.

Figure 3-4 Setting GPIB Address

d. Set the Model same as the instrument model no. or error may occur when doing initialization. Mode and Channel Index has to match properly or error may occur if not.

Figure 3-5 Mapping Appropriate Mode and Channel Index

e. When the communication protocol is confirmed without error, press **Set OK** on Soft Panel the program will start initializing the instrument and go to next window.

Figure 3-6 Confirming the Communication Interface Setting

4. Setting Hardware

Click **Set OK** on the start screen will go to the following window as Figure 4-1 shows.

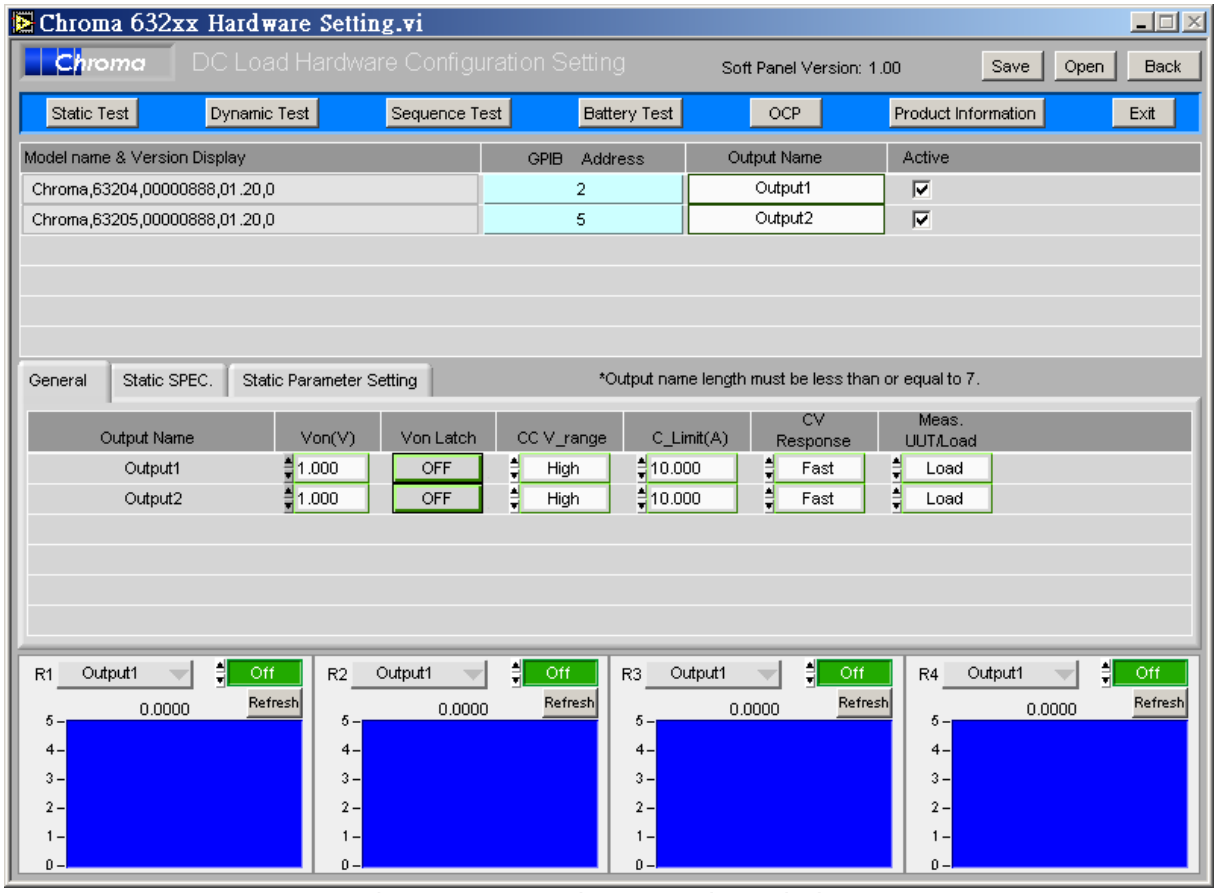


Figure 4-1 Hardware Setting Window

If the communication check passed it will read back the F/W version info of the instrument in Model Name & Version Display. If there is any error in the communication protocol, the message “Connection Error” will appear as Figure 4-2 shows. If the communication protocol is correct, the model no. and firmware version will display in black as Figure 4-3 shows.

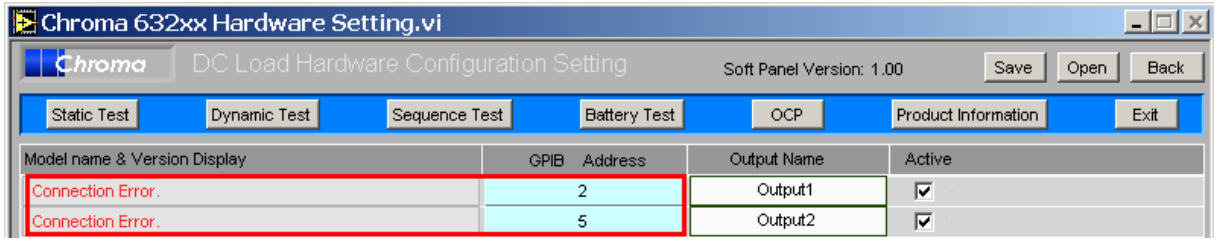


Figure 4-2 Indication when Communication Check Fail

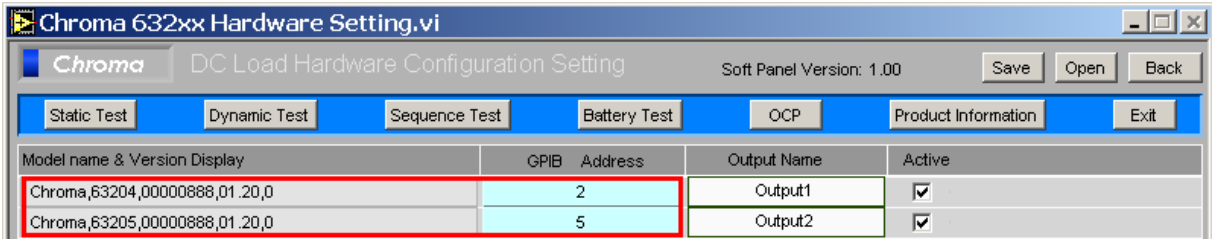


Figure 4-3 Indication when Communication Check Pass

4.1 Using Demo Mode

The software will enter into Demo mode if no hardware device is connected, and users can understand the functions of Soft Panel through the Demo program.

4.2 Using Output Name and Active

Users can set the Output Name as they like; however, it is suggested not to exceed 7 characters. The reason is that the test report format of Program Function, Battery Function and OCP Function for Output Name allows 7 characters only. Users should take this restriction under consideration when naming. The default setting is True indicating the mapped channel is active. Users can specify the channel to be inactive without changing the hardware connection by clearing the check box. The Soft Panel will not send any command to the hardware device.

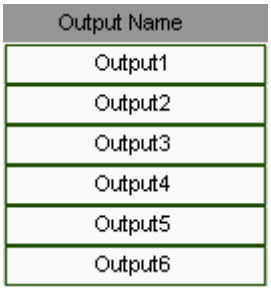


Figure 4-4 Output Name

Figure 4-5 Active

4.3 Function Buttons

Figure 4-6 shows the function buttons including: Static Test, Dynamic Test, Sequence Test, Battery Test, OCP, Production Information and Exit. Users can click it for operation based on the test. Detail information of the Function buttons is described in the following chapter.

Figure 4-6 Function Buttons

4.4 Saving and Opening Parameter

There are two buttons at the upper right window, one is **Save As…** and the other is **Open…**. It can save all Hardware Setting parameters for next time use.

4.4.1 SAVE AS

Click the button as Figure 4-7 shows can save the parameters set on current page to a .HW file.

Figure 4-7 Save As Button

To save the current parameters for next time use, click **Save As…** will open the dialog box as Figure 4-8 shows. Select the path and the filename (with the extension .HW) for save. Users can save different settings to different files. The saved file will occupy some disk space and more settings can be saved if the disk space is large enough.

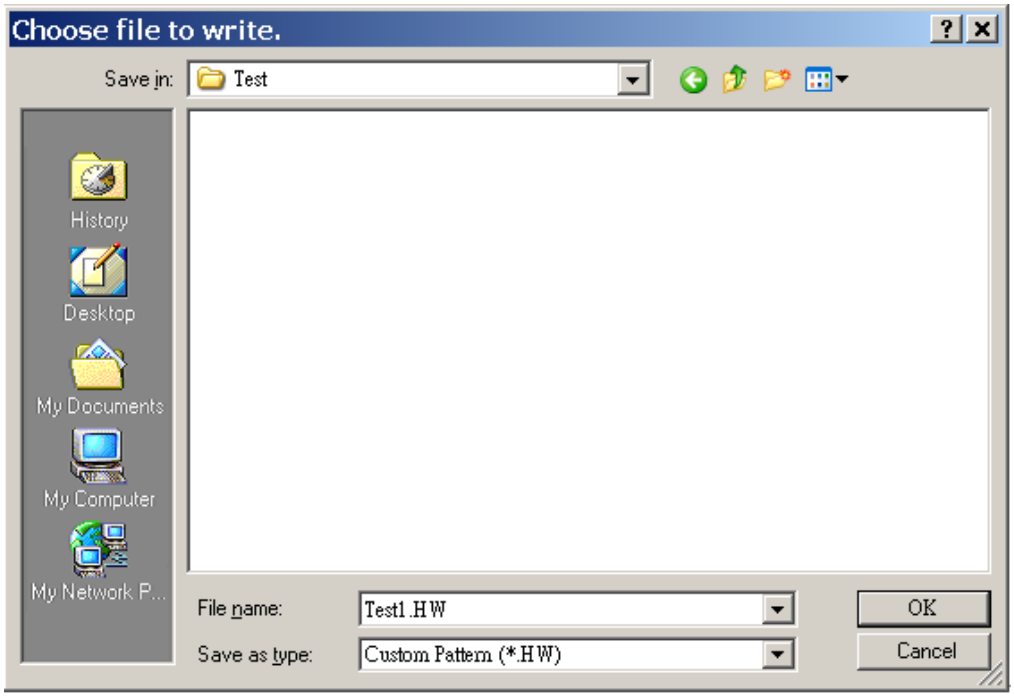


Figure 4-8 Dialog Box for SAVE

4.4.2 OPEN

Click the button as Figure 4-9 shows can open a .HW file that is already saved in the hard disk. It simplifies the work for entering parameters and avoids input errors.

Figure 4-9 Open Button

Users can enter the path in the following dialog box to open the saved parameters or click Cancel to abort the action.

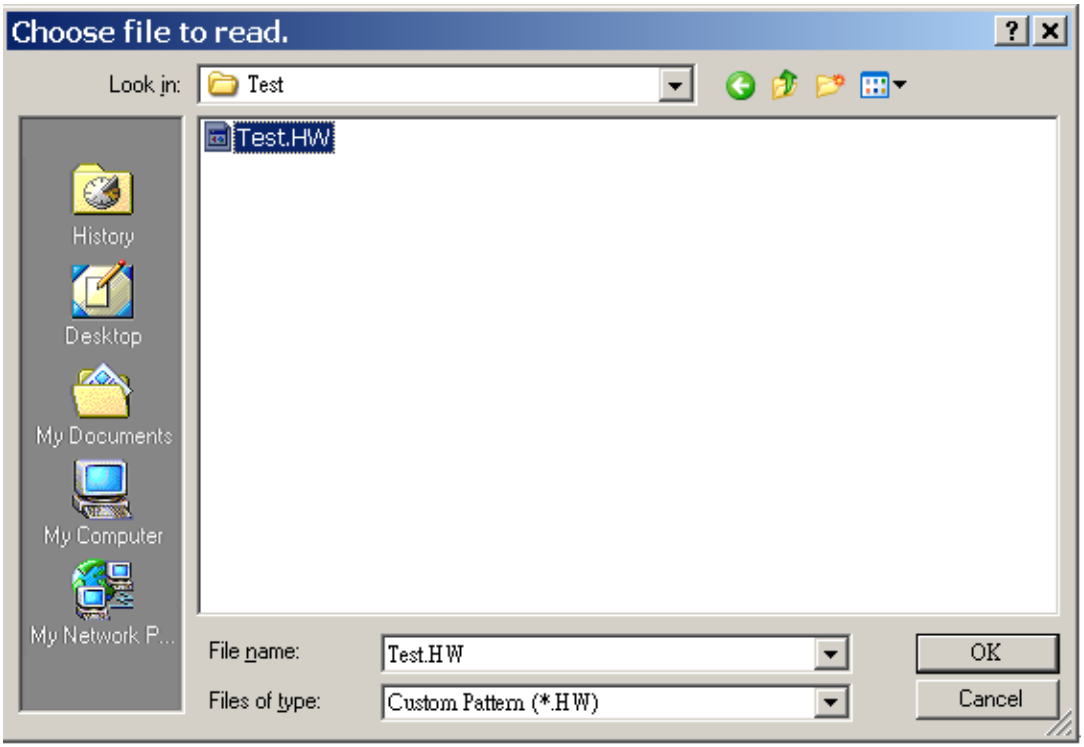


Figure 4-10 Dialog Box for OPEN

4.5 Back

Click this button will skip the current page and return to previous window.

Figure 4-11 Back Button

4.6 Exit

Click this button will quit the Soft Panel.

Figure 4-12 Exit Button

4.7 General

The General tab is Hardware Configuration Setting including Von, Von Latch, CC V_range, C_Limit, Response and Meas. UUT/LOAD. The setting is to map the Output Name to the command-receiving channel.

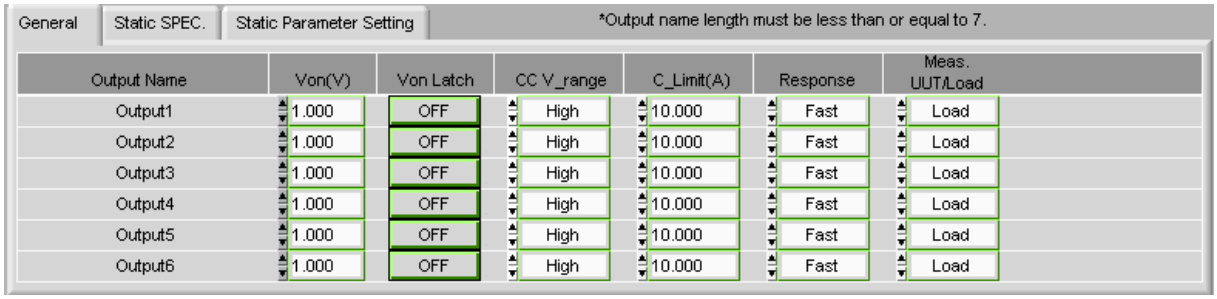


Figure 4-13 General Parameters Setting Screen

4.7.1 Von Point

It sets the UUT to start loading current when the output voltage reaches a certain volt in Configure Page.

4.7.2 Von Latch

It maps to Von Point in Configure Page. Latch On means once the measured voltage reaches Von, it will start loading current no matter if the voltage is dropping lower than Von.

4.7.3 CC V_range

When it is set to High it means it is in the high range of model's voltage.

4.7.4 Current Limit

It appears when selecting CV Mode in Configure Page which means to set the maximum current and it will go to protection mode when exceeds.

4.7.5 CV Response

It appears when selecting CV Mode in Configure Page. It indicates the hardware internal reaction speed from original voltage raises to the set voltage when set to Fast.

4.7.6 Meas. UUT/Load

It indicates the measurement of voltage is from Vsense terminal when it is set to UUT and is from Load terminal when set to Load in Configure Page.

4.8 Static SPEC.

This tab of settings is related to Static Test only. It is mainly to indicate if the measured voltage, current, resistance and power are within the range. It shows in green if yes or in red if no.

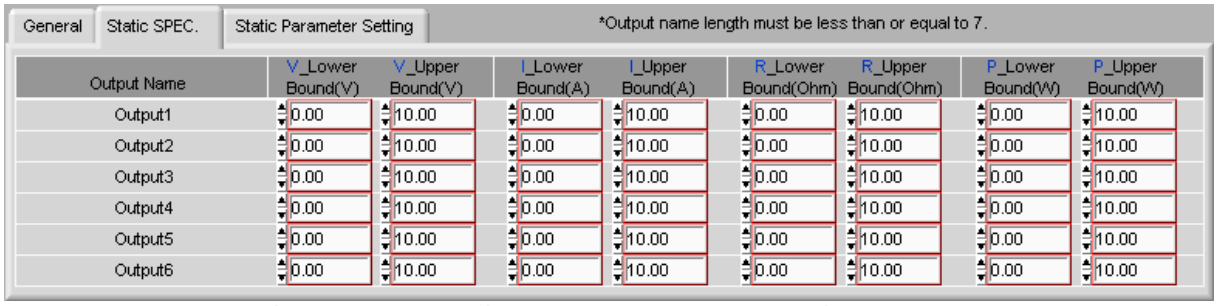


Figure 4-14 Static SPEC. Parameters Setting Screen

4.9 Static Parameter Setting

This tab of setting is related to Static Test only. It can set the Rise Slew Rate and Fall Slew Rate of CCL or CCH.

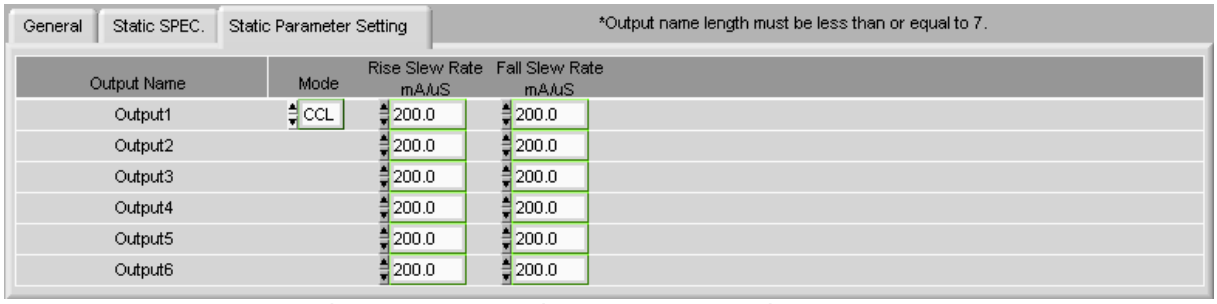


Figure 4-15 Static Parameter Setting Screen

4.10 Reading Display

The Reading Display is composed of 4 blocks and Figure 4-16 shows the individual block. Each block has same functions for selection including: graphic display, numeric display, read back type selection and graphic refresh button.

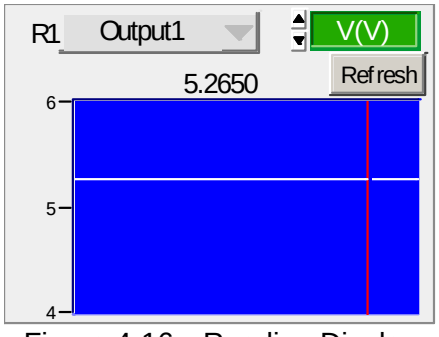


Figure 4-16 Reading Display

4.10.1 Graphic Reading Display

It displays the captured reading from machine. The red vertical line indicates the updated position (the latest value.) The reading vertical scale will adjust automatically. The X-axis is time and the Y-axis is the measured data.

Figure 4-17 Graphic Reading Display

4.10.2 Numeric Display

It is the latest read back data shown in numbers and will continue to update.

5.2650

Figure 4-18 Numeric Reading

4.10.3 Read Back Type Selection

It is able to select the value to be read back. To monitor the voltage, click R1 to select the type as Figure 4-19 shows, where Off indicates not reading back or stop returning the value.

Figure 4-19 Selecting Read Back Type

4.10.4 Refresh

It clears all data in the graphic display and redisplay again.

Figure 4-20 Refresh Button

5. Static Test

The main function of this window is to run static test. Users can follow the requirements to select the loading mode for test. First the software will prompt the Output Name to indicate the Channel for action. It is necessary to refer to this column when setting Mode and Loading. The functions of this window are explained below.

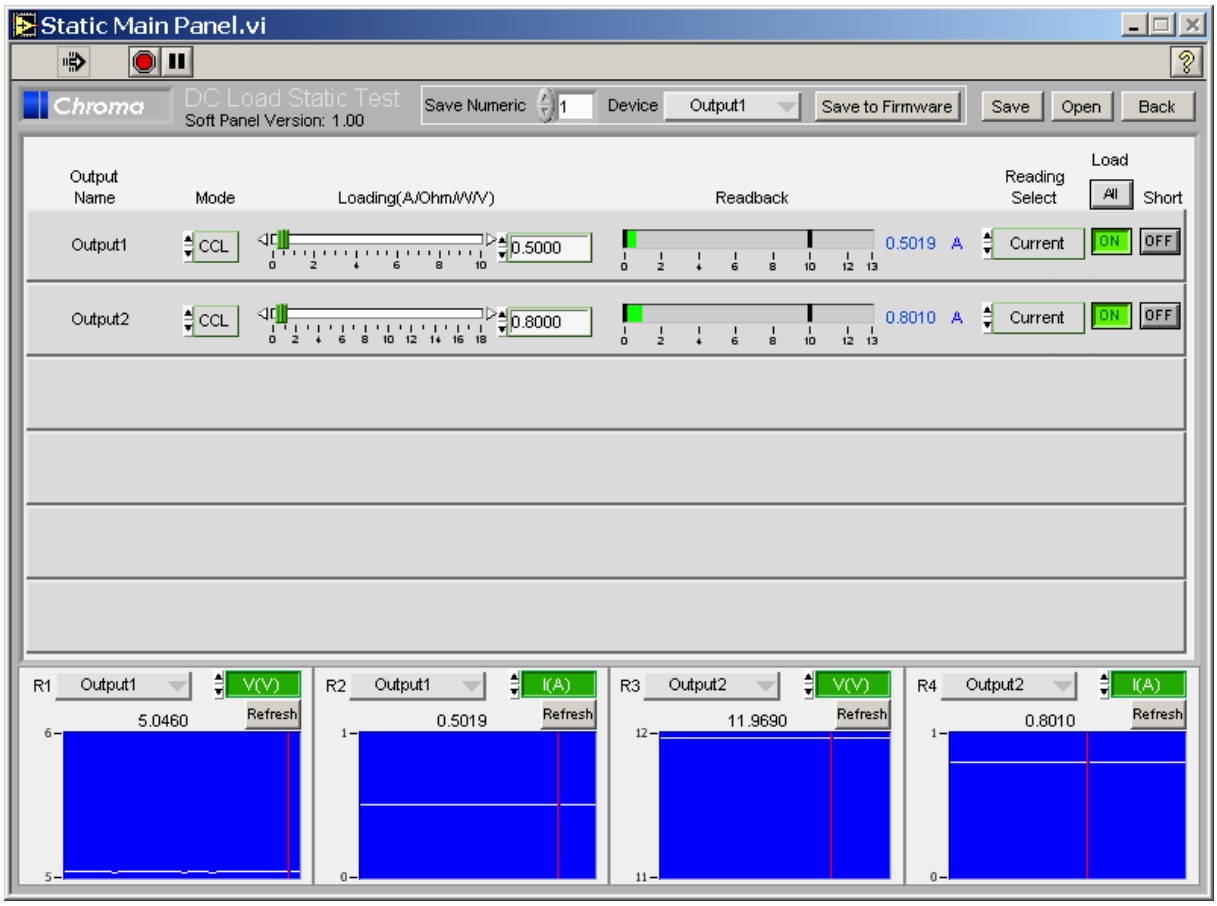


Figure 5-1 Static Test Window

5.1 Selecting Mode

There are CCL, CCH, CRL, CPL, CPH, CVL and CVH loading modes in Static Test. Each channel has these 8 options for selection. When different mode is selected, the loading range to be set changes too. Click the mode of each channel will prompt a menu for selection or use the up and down arrow to select it.

Figure 5-2 Static Test Mode Selection

5.2 Setting Loading

The Loading range changes not only according to the Mode but also following the Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

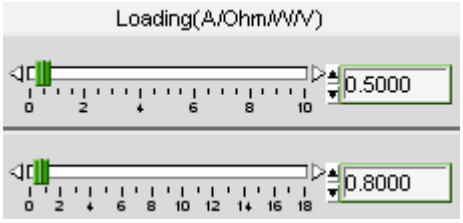


Figure 5-3 Setting Loading

5.3 Reading Select

It works with the Readback indicator at left and has Voltage, Current, Resistance, Power or Off for selection. When Off is selected, the mapping Readback indicator will be cleared.

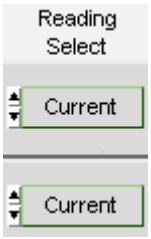


Figure 5-4 Reading Select

5.4 Readback

It is composed of a bar and a digital indicator. This digital indicator shows the measured value and the bar shows PASS or FAIL. If the reading is within the set range, the bar will appear in green to indicate PASS; otherwise it will show red to mean FAIL. The setting of Spec is done in Configuration Setting.

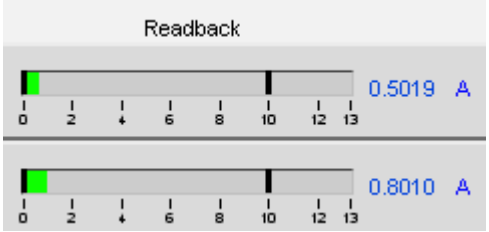


Figure 5-5 Readback Indicator

5.5 Setting Load On/Off

It can enable the loading action to Load On or disable it to Load Off. When Load All is set, all channels will be Load On or Load Off together.

Figure 5-6 Setting Load On/Off

5.6 Setting Short On/Off

It is set for short test. When On appears after clicked, the red LED indicates the hardware loading is shorted and click it again will turn to Short OFF.

Figure 5-7 Setting Short On/Off

5.7 Save to Firmware

This button is to save the parameters set by user to instrument firmware. To use it, select the Save Numeric and click “Save to Firmware” to send out the present window settings.

Figure 5-8 Save to Firmware Button

5.8 Reading Display

It is same as the functions described in section 4.10.

5.9 SAVE AS, OPEN & BACK

The function of these three buttons is same as Hardware Setting Function; see section 4.4 and 4.5 for detail information.

6. Dynamic Test

The main function of this window is to test the dynamic loading as need. First the software will prompt the Output Name to indicate the Channel for action. It is necessary to refer to this column when setting Mode and Loading. When the total Channel number is larger than 3, the scroll bar will be active. Users are able to scroll it for page change and the maximum channel number of each page is 3. The functions of this window are explained below.

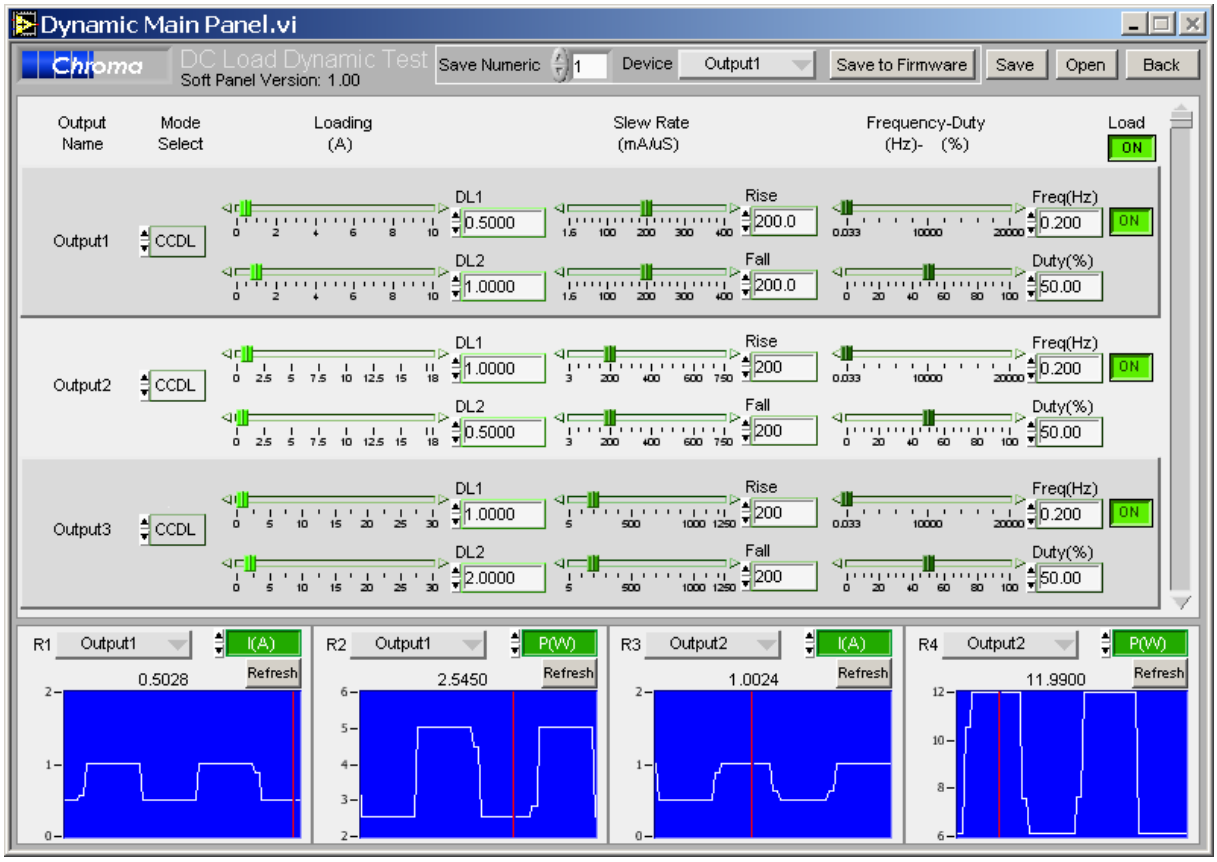


Figure 6-1 Dynamic Test Window

6.1 Selecting Mode

There are CCDL and CCDH loading modes in Dynamic Test. Each channel has these two options. When different mode is selected, the loading range to be set changes too. Click the mode of each channel will prompt a menu for selection or use the up and down arrow to select it.

Figure 6-2 Dynamic Test- Mode Select

6.2 Setting Loading

There are DL1 and DL2 two dynamic loadings. The Loading range changes not only according to the Mode but also following the Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

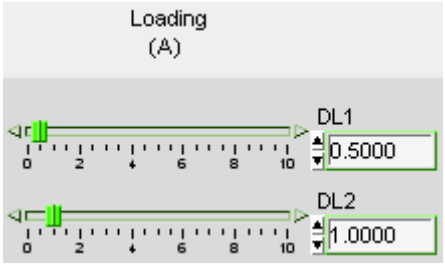


Figure 6-3 Setting Loading

6.3 Setting Slew Rate

Slew Rate has Rise and Fall two parameters. It is to set the current falling speed when setting load, the unit is mA/uS. The range changes not only according to the Mode but also following the Model.

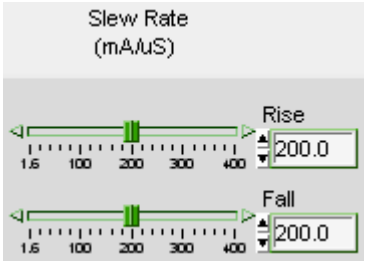


Figure 6-4 Setting Slew Rate

6.4 Setting Frequency-Duty

It is composed of Freq (Hz) and Duty (%). The setting range of Frequency is from 0.033 to 20000Hz and Duty is from 0 % to100%. The mapped instrument settings are T1 and T2, and the calculation formula is T1= (1/Frequency)* Duty%, T2= (1/Frequency)*(1- Duty%).

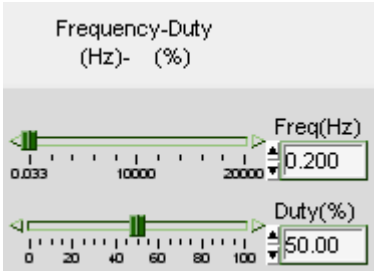


Figure 6-5 Setting Frequency-Duty

6.5 Setting Load On/Off

It can enable the loading action to Load On or disable it to Load Off. When Load All is set, all channels will be Load On or Load Off together.

Figure 6-6 Setting Load On/Off

6.6 Save to Firmware

This button is to save the parameters set by user to instrument firmware. To use it, select the Save Number and click “Save to Firmware” to send out the present window settings.

Figure 6-7 Save to Firmware Button

6.7 Reading Display

It is same as the functions described in section 4.10.

6.8 SAVE AS, OPEN & BACK

The function of these three buttons is same as Hardware Setting Function; see section 4.4 and 4.5 for detail information.

7. Program Test

This mode provides List Sequence Test and Step Sequence Test to replace the manual step test. The test program can be defined in advance so that the software can control the hardware for execution following the set timing. First the Output Name will prompt to show the channel that will be mapped when setting Mode and Loading. The functions of this window are explained below.

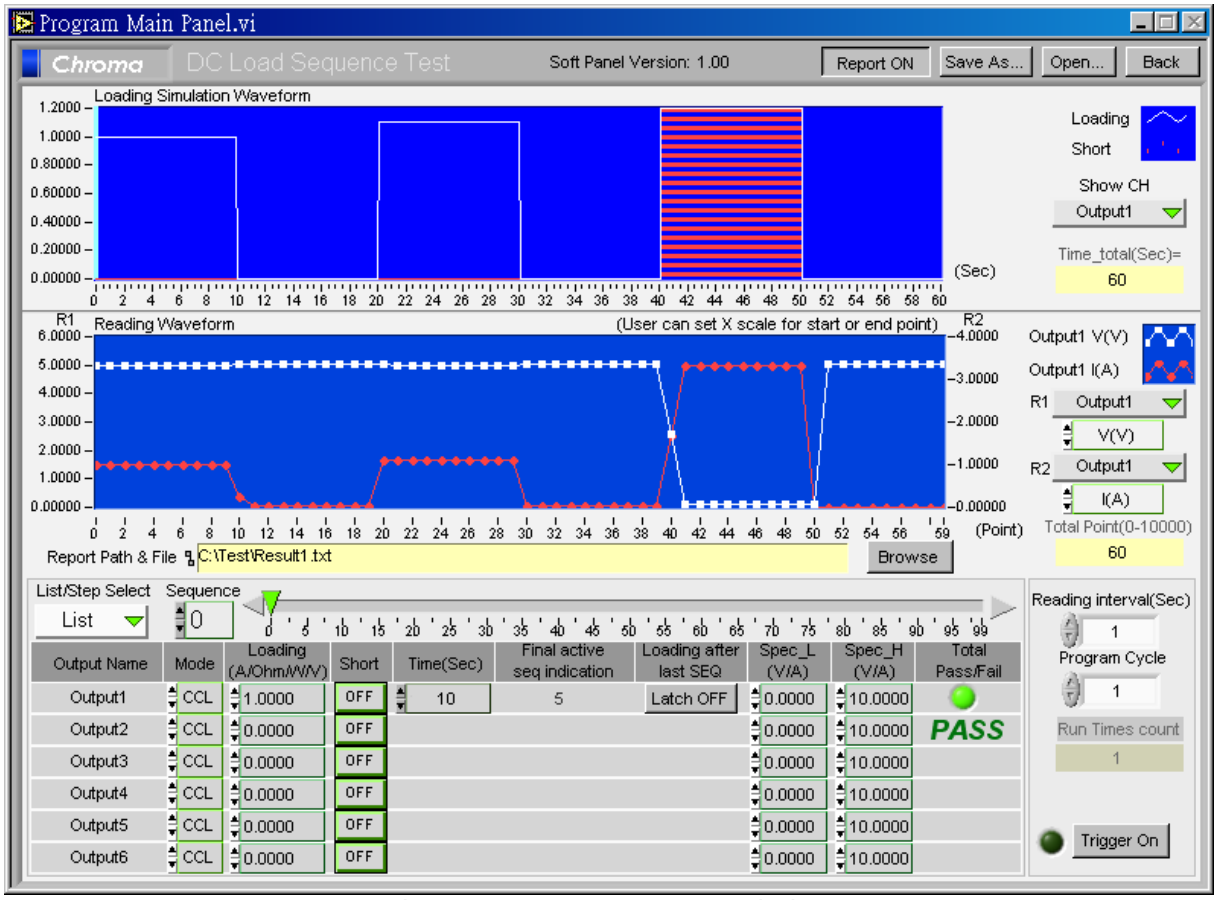


Figure 7-1 Program Test Window

7.1 Loading Simulation Waveform

This is a display area that draws the changes of loading to include Loading value (Y axis), execution time ratio (X-axis) and if using Short (List Mode). The red line area represents short. Show Channel indicates which channel settings are used to do the simulation. Users can choose only one channel at a time. Time_total indicates the time required for execution under the present settings. In the mean time the Waveform Chart has a scanning line running to inform users the number of sequence is in execution, the loading value and completion percentage.

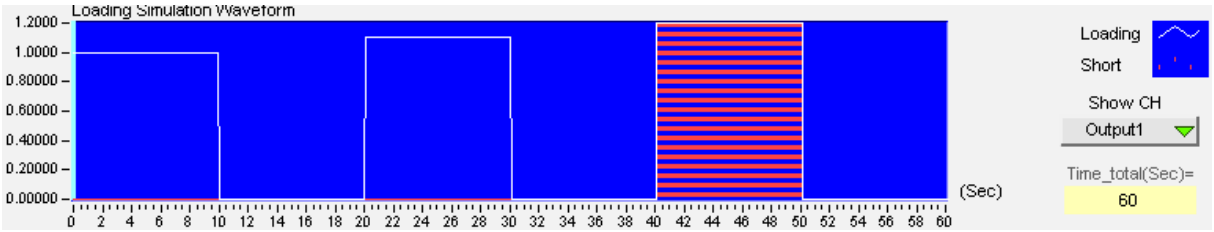


Figure 7-2 Loading Simulation Waveform

7.2 Setting List Mode Parameter

Select List as Figure 7-3 shows in List/Step to use the List Mode. It is composed of 100 sequences (0-99) and users can enter the settings to specified items based on the requirements or conditions. Each sequence contains Loading, Short and Time parameters. Mode and Load Set will not change as the sequence changes. The definition of each item is described below.

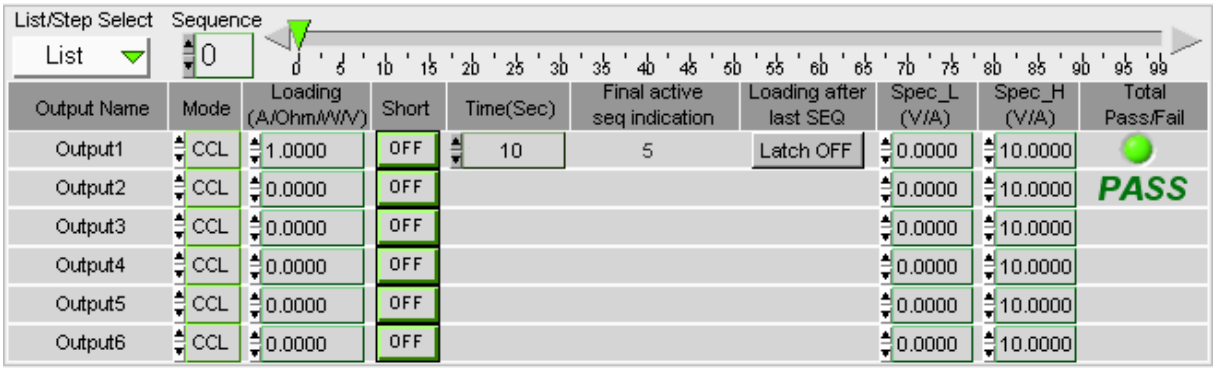


Figure 7-3 List Mode Parameters

7.2.1 Setting List/Step

It is at the upper left of setting area with List or Step Mode for selection. The selected mode will stay when done.

Figure 7-4 Setting List/Step

7.2.2 Setting Sequence

The range of sequence is from 0 to 99. There are 100 sequences in List Mode for execution. When switching to different sequence, the parameters - Loading, Short and Time will change as well, and each of them has 100 sets available for setting.

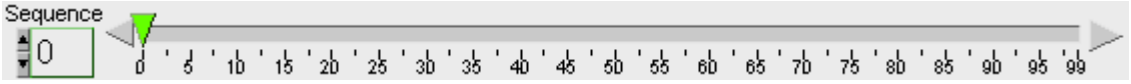


Figure 7-5 Setting Sequence

7.2.3 Displaying Output Name

The names of Output Channel display are defined by the configuration in Hardware window. Users can refer to the chapter *Setting Hardware* for the settings.

Figure 7-6 Displaying Output Name

7.2.4 Setting Mode

There are CCL, CCH, CRL, CRH, CPL, CPH, CVL and CVH loading modes in Program Test. Each channel has these 8 options. When different mode is selected, the Loading range will be changed too. Click the channel will prompt a menu of modes for selection or use the up/down arrow to select it. Only one mode can be applied for the 100 sequences and no switch is allow during the process. The setting will not change in List Mode or Step Mode.

Figure 7-7 Setting Mode

7.2.5 Setting Loading

There are 100 sets of “Loading” available for setting in List Mode. When users change the sequence, the Index will modify the “Loading” as well for mapping. The Loading range varies with Mode and Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

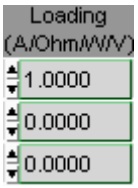


Figure 7-8 Setting Loading

7.2.6 Setting Time

There are 100 sets of “Time” available for setting in List Mode. The unit is second. When users change the sequence, the Index will modify the “Time” as well for mapping. However, the channels in a sequence will be executing for the same time period. In addition, if the time sets to 0 it indicates the subsequent time settings for sequence are all invalid. It also means the program doesn’t have to be ended when 100 sequences are done. Set a certain sequence to 0, the program will stop running at one sequence prior. The mapping setting is Final Active Seq.

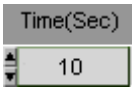


Figure 7-9 Setting Time

7.2.7 Setting Short

There are 100 sets of "Short" available for setting in List Mode. When users change the sequence, the Index will modify the "Short" as well for mapping.

Figure 7-10 Setting Short

7.2.8 Final Active Seq.

Final Active Seq. indicates the present valid sequence, which is one that execution will stop. Set a certain sequence's time to 0 then the program will run till the sequence prior no matter if the later "Time" setting is 0.

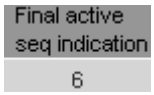


Figure 7-11 Final Active Seq.

7.2.9 Setting Loading after last SEQ

When Latch ON is set it keeps the loading state of last sequence and won't change the setting due to switching to List Mode or Step Mode.

Figure 7-12 Setting Loading after last SEQ

7.3 Step Mode Parameter

To use Step Mode, select Step in List/Step as Figure 7-13 shows. The same settings to List Mode are Output Name, Mode and Load Set. Following explains their definition. The biggest difference between Step and List is that the execution of each Step is fixed without increasing or decreasing loading, and the increment or decrement is also fixed.

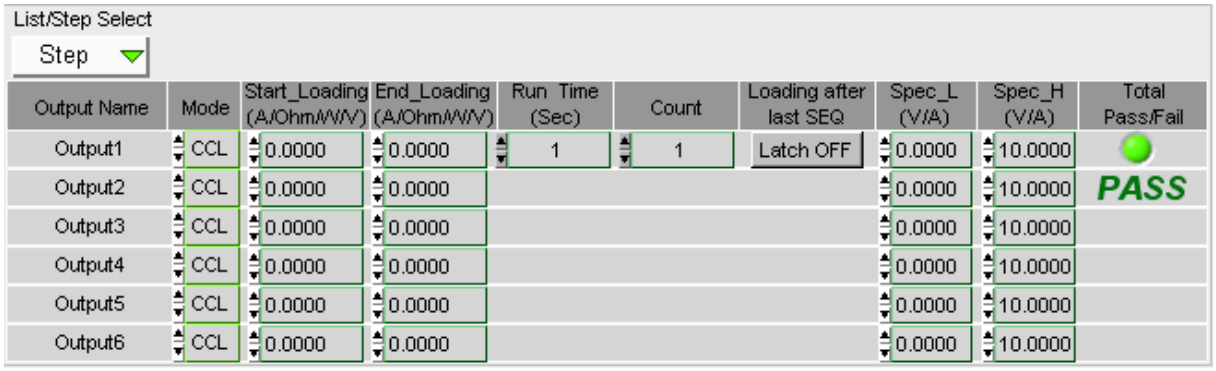


Figure 7-13 Step Mode Parameter

7.3.1 Setting Start_Loading

It sets the start loading of each channel under Step. The Loading range changes not only according to the Mode but also following the Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

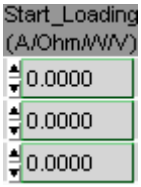


Figure 7-14 Setting Start_Loading

7.3.2 Setting End_Loading

It sets the end loading of each channel under Step. The Loading range changes not only according to the Mode but also following the Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

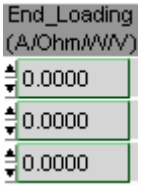


Figure 7-15 Setting End_Loading

7.3.3 Setting Run Time

It sets the total execution time for the Step that is same for all channels. The unit is second.

Figure 7-16 Setting Run Time

7.3.4 Setting Count

It sets how many steps are counted from Start_Loading to End_Loading during Run_Time. The range is from 1 to 1000. When setting to 1, it indicates only Start_Loading will be run.

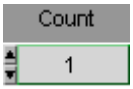


Figure 7-17 Setting Count

7.4 Setting Trigger On/Off

Once all conditions are set, they can be executed by clicking Trigger On. During execution, a Run Bar will appear in the Loading simulation figure to inform users the present progress. Click Trigger Off to stop it or Pause to suspend it.

Figure 7-18 Setting Trigger On/Off

Pause Button:
This button only shows when Trigger On to suspend present action. A dialog box will prompt when clicked and click "OK" to resume it.

Figure 7-19 Pause Button

7.5 Setting Spec_L Spec_H

It indicates if the measured voltage or current are within the range. If yes, the Pass/Fail column in report will show Pass or Fail if no. Please be noted that when Mode is set to CC, CR, CP the judgment condition is voltage and it is current if the Mode is set to CV.

Figure 7-20 Setting Spec_L Spec_H

7.6 Displaying Total Pass/Fail

The Total Pass/Fail will appear in red to indicate FAIL if the voltage or current of any sequence or step in all channels exceeds the Spec_L and Spec_H range. Otherwise, it shows in green to indicate PASS.

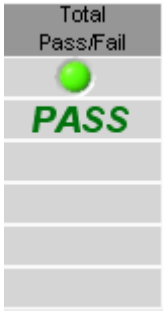


Figure 7-21 Total Pass/Fail Indicator

7.7 Setting Program Cycle

Reading interval sets the time for reading back the voltage and current then show them on Reading Waveform. The Program Cycle can be set after the parameters are set in List Mode or Step Mode to inform the software for the number of times of repeating execution. Run Times count shows the count that has been executed.

Figure 7-22 Setting Program Cycle

7.8 Reading Waveform

Every read back voltage and current will be displayed in Reading Waveform. Users are able to set the Channel to be displayed and the read back value type, also can specify a desired area by inputting the start and end of X-axis to monitor a certain time frame.

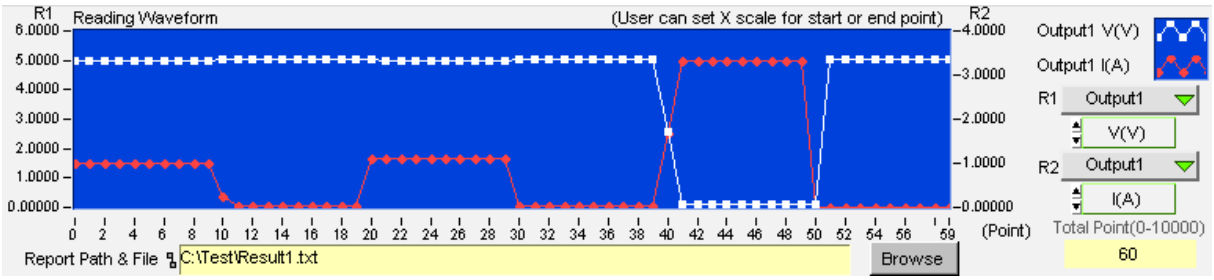


Figure 7-23 Reading Waveform

7.9 SAVE AS, OPEN & BACK

The function of these three buttons is same as Hardware Setting Function; see section 4.4 and 4.5 for detail information.

7.10 Report Format

Program test provides a simple, pure text report in *.txt format. The report function and its file path as well as filename are explained below:.

7.10.1 Report ON/OFF

If there is a need to open the Report function, just set the Report to ON to enable it and the Report Path & File will appear.

Figure 7-24 Report ON/OFF

7.10.2 Report Path & File

This is for users to define the Report path and file name when Report function is enabled. Click Browse will prompt a dialog box for selecting path and file name.

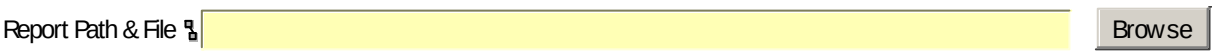


Figure 7-25 Report Path & File

7.10.3 Report Result

The report result contains settings, readings and Total Pass/Fail. The settings include: Program Function, Total run time, Latch ON/OFF, Time Interval(Sec), Program Cycle, Output Name, Mode, Loading Setting, Short, Time(Sec). The readings include: V(V), I(A), R(Ohm), P(W) and the mapping time. See
Figure 7-26 for the example.

Chroma DC Load Program Test Report

---------- Setting ----------
Program Function : List Type Total run time : 45.0
Latch ON/OFF : OFF Time Interval(Sec): 5
Program Cycle : 1

Output Channel	Mode	Setting(A/Ohm/W/V)	Short	Time(Sec)
Output1	CCL	1.0000	No	5.0
Output1	CCL	0.0000	No	5.0
Output1	CCL	1.0000	No	5.0
Output1	CCL	0.0000	No	5.0
Output1	CCL	0.8000	No	5.0
Output1	CCL	0.0000	No	5.0
Output1	CCL	1.2000	No	5.0
Output1	CCL	0.0000	No	5.0
Output1	CCL	1.3000	No	5.0

Output Channel	Spec_L(V/A)	Spec_H(V/A)
Output1	0.0000	10.0000

Total Pass/Fail Result: Pass

---------- Output1 Reading ----------

Point	V(V)	I(A)	R(Ohm)	P(W)	Pass/Fail	Date/Time
0	4.977	1.00125	4.9707	4.983	Pass	2006-08-24 PM 07:25:15
1	5.035	0.018	279.722	0.09	Pass	2006-08-24 PM 07:25:20
2	4.977	1.00181	4.968	4.986	Pass	2006-08-24 PM 07:25:25
3	5.035	0.018	279.722	0.09	Pass	2006-08-24 PM 07:25:30
4	4.992	0.801	6.2322	3.998	Pass	2006-08-24 PM 07:25:35
5	5.037	0.018	279.833	0.087	Pass	2006-08-24 PM 07:25:40
6	4.967	1.20206	4.132	5.97	Pass	2006-08-24 PM 07:25:45
7	5.035	0.01743	288.869	0.087	Pass	2006-08-24 PM 07:25:50
8	4.962	1.30218	3.8105	6.458	Pass	2006-08-24 PM 07:25:55

Figure 7-26 Report Result

8. Battery Test

This function is test battery discharge by setting a fixed load and checking the battery output voltage after loading started. Once the voltage is adjusted to a certain cutoff potential, stop loading and calculate the total electric charge (mA-hour). The entire battery discharge status can be seen from the Battery Voltage and Current Reading Chart.

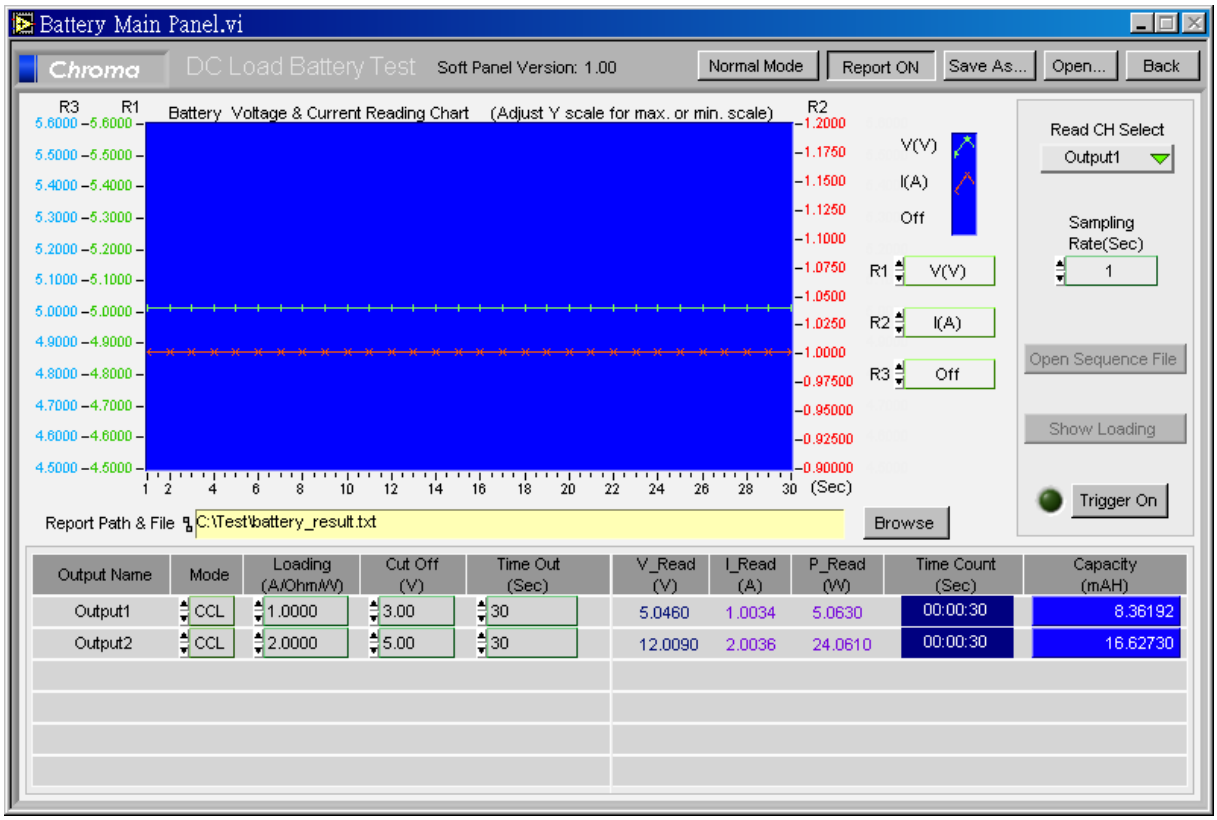


Figure 8-1 Battery Test Window

8.1 Operation Mode

It sets the operation mode to Normal or Program.

Figure 8-2 Selecting Operation Mode

8.1.1 Normal Mode

If the Operation Mode is set to Normal it indicates the load is a fixed value that will not changed as time goes.

8.1.2 Program Mode

If Operation Mode is set to Program, click **Open Sequence File** can open the saved parameter files in Program Test. Then click **Trigger On** to start loading and calculate the session total electric charges. Users can also click **Show Loading** to show Loading Simulation Waveform.

Figure 8-3 Selecting Open Sequence File

Figure 8-4 Selecting Show Loading

8.2 Battery Voltage & Current Reading Chart

Users can select R1, R2 and R3 to draw the voltage, current and power curve in a chart as Figure 8-5 shows, or choose to turn off the curve, or specify the desired area by inputting the start and end of Y-axis. Read CH Select indicates what channel reading will be used to draw the curve and one channel can be selected at a time at the beginning. Sampling Rate is to set the time (sec.) to display the graphic readings. For long hour discharge, the rate can be increased so that the points won't be too much. The X-axis is the points for drawing. The points are calculated by comparing the time set by channel with the Sampling Rate before executing discharge test.

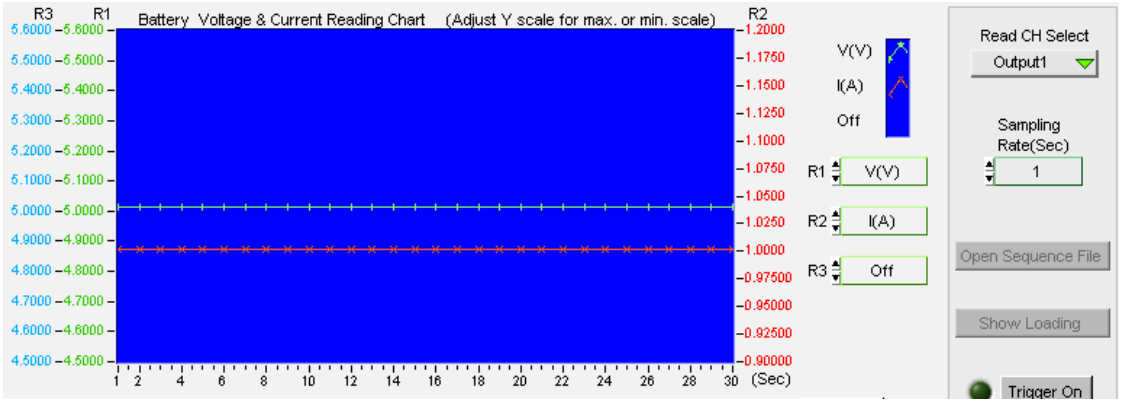


Figure 8-5 Battery Voltage & Current Reading Chart

8.3 Setting Battery Parameter

It sets the discharge loading mode and how many loads for loading. It also sets the end condition such the Cut Off voltage or when to Time Out. Once a condition is met, loading or discharge test will stop immediately.

Output Name	Mode	Loading (A/Ohm/W)	Cut Off (V)	Time Out (Sec)
Output1	CCL	1.0000	3.00	30
Output2	CCL	2.0000	5.00	30

Figure 8-6 Setting Battery Parameter

8.3.1 Displaying Output Name

The name of Output Channel display are defined by the configuration in Hardware window. Users can refer to the chapter *Setting Hardware* for the settings.

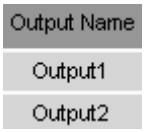


Figure 8-7 Displaying Output Name

8.3.2 Setting Mode

There are CCL, CCH, CRL, CRH, CPL and CPH loading modes in Battery Test. Each channel has these 6 options. When different mode is selected, the Loading range will be changed too. Click the channel will prompt a menu of modes for selection or use the up/down arrow to select it.

Figure 8-8 Setting Mode

8.3.3 Setting Loading

The Loading range varies with Mode and Model. Moreover, it changes according to parallel use which should be kept in mind. When the input value exceeds the maximum range, it will stay at the maximum and same for the minimum.

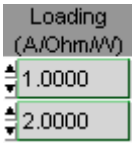


Figure 8-9 Setting Loading

8.3.4 Setting Cut Off

It sets the condition to end discharge test. When the measured voltage is lower than the set condition, the loading stops and so does the channel discharge test to get the capacity mAH.

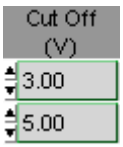


Figure 8-10 Setting Cut Off

8.3.5 Setting Time Out

It sets the condition to end discharge test. Once the test time reaches the time out setting though the measured voltage is not lower than the set conditon, the loading stops the loading stops and so does the channel discharge test to get the capacity mAH.

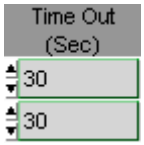
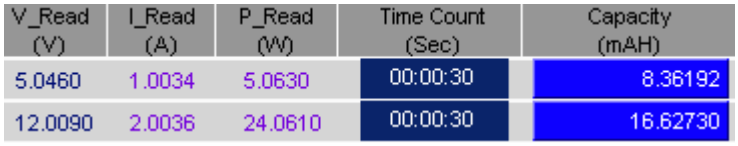


Figure 8-11 Setting Time Out

8.4 Displaying Measurements

This area shows the measured voltage, current, power, execution time and the discharged capacity at present. The voltage, current and power read back one time per second. When the voltage is lower than Cut Off, the Channel Time Count will stop and the Capacity (mAH) will stop counting too.



V_Read (V)	I_Read (A)	P_Read (W)	Time Count (Sec)	Capacity (mAH)
5.0460	1.0034	5.0630	00:00:30	8.36192
12.0090	2.0036	24.0610	00:00:30	16.62730

Figure 8-12 Displaying Measurements

8.5 Setting Trigger On/Off

Once all conditions are set, they can be executed by clicking Trigger On. During execution, a Battery Voltage & Current Reading Chart will start to draw the curve according to the measurement values to inform users the present progress. To stop it, just click Trigger Off. All tested channels will follow the set conditions to proceed counting or stop.

Figure 8-13 Setting Trigger On/Off

8.6 SAVE AS, OPEN &BACK

The function of these three buttons is same as Hardware Setting Function; see section 4.4 and 4.5 for detail information.

8.7 Report Format

Battery test provides a simple, pure text report in *.txt format. See Section 7.10 for the detail description of report function and its file path as well as filename.

Battery Test Report:
The report result contains settings and readings. The settings include: Mode, Setting (A/Ohm/W), Cut Off (V) and Time Out (Sec). The readings include: Time Count, Capacity (mAH), Voltage(V), Current(A), Power(W). See Figure 8-14 for the example.

Chroma DC Load Battery Test Report

Soft Panel Version:1.00
Test Mode:By Normal
Sampling Rate(Sec):1

---------- Setting ----------

Output Channel	Mode	Setting(A/Ohm/W)	Cut Off(V)	Time Out(Sec)
Output1	CCL	1.0000	3.00	5.0
Output2	CCL	2.0000	5.00	5.0

---------- Reading ----------

Output Channel	Time Count	Capacity(mAH)
Output1	00:00:05	1.394086
Output2	00:00:05	2.785153

********** Detail Data **********

No.	Voltage (V)	Current (A)	Power (W)
Output1			
0	5.1400	0.0016	0.0080
1	5.0310	1.0034	5.0480
2	5.0310	1.0034	5.0480
3	5.0310	1.0034	5.0480
4	5.0310	1.0034	5.0480
Output2			
0	12.1750	0.0000	0.0000
1	12.0070	2.0053	24.0770
2	12.0070	2.0053	24.0770
3	12.0070	2.0053	24.0770
4	12.0070	2.0053	24.0710

Figure 8-14 Report Result

9. OCP Test

The over current protection test is to observe the output voltage and current changes when the loading current is getting bigger and bigger. The changes are shown in graphic. This test is not suitable when the UUT is in Hiccup mode.

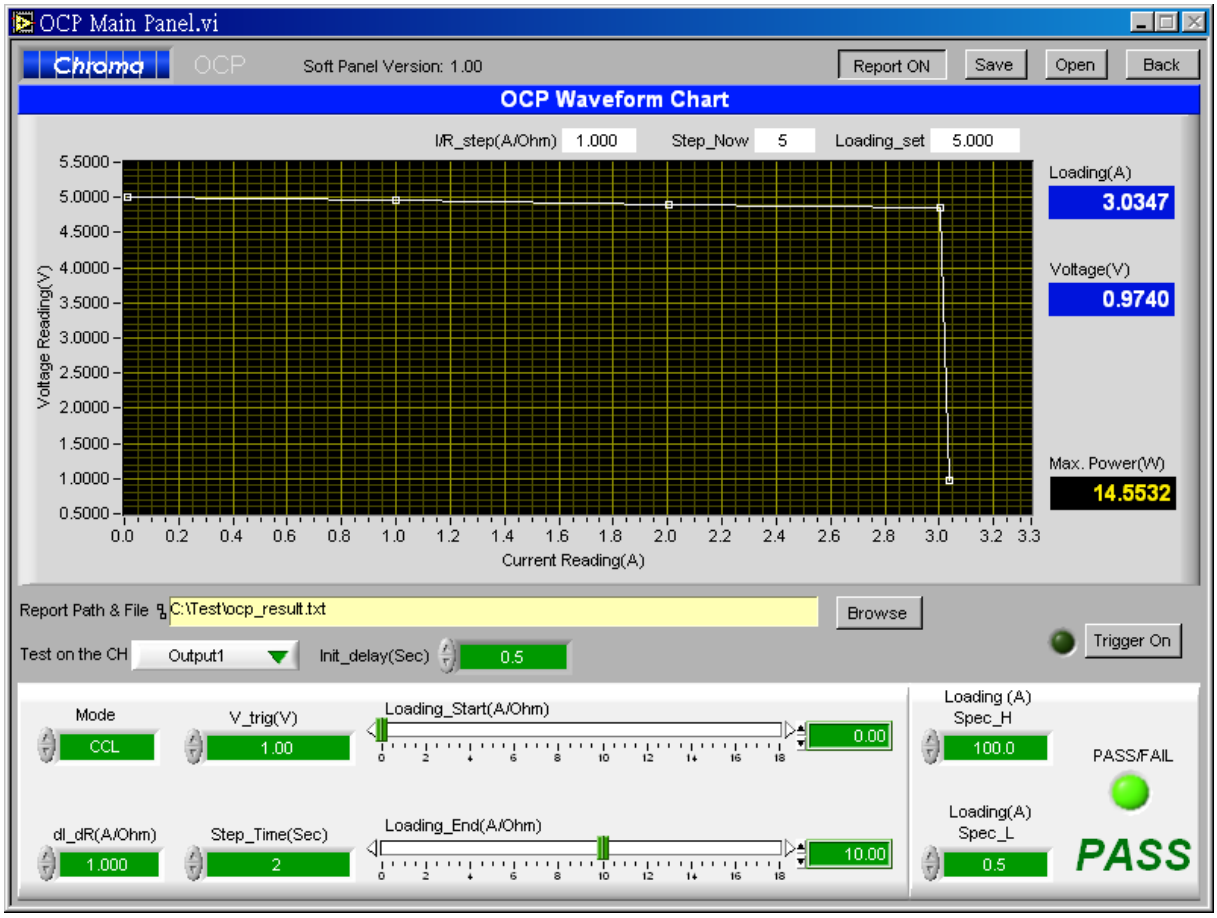


Figure 9-1 OCP Test Window

9.1 OCP Parameter

There are Mode, V_trig, dI_dR, Step_Time, Loading_Start, Loading_End, Test on the CH, Init_delay, Loading Spec_H, Loading Spec_L and Trigger On parameters available for setting. Loading, Voltage, Max. Power and Loading_set, Step_Now, and I/R_step are shown in digital format. The OCP Waveform Chart will draw the waveform according to the voltage and current readings.

9.1.1 Setting Mode

There are CCL, CCH, CRL & CRH 4 loading modes in OCP Test for selection. When different mode is selected, the Loading range will be changed too. Click the channel will prompt a menu of modes for selection or use the up/down arrow to select it.

Figure 9-2 Mode

9.1.2 V_trig

It sets the output voltage drop for terminating the test.

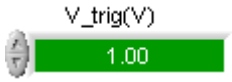


Figure 9-3 OCP – V_trig

9.1.3 Init_delay

It sets the time delayed for measurement after loading. It usually causes measurement error when measuring right after loading.

Figure 9-4 OCP – Init_delay

9.1.4 Loading_Start

It sets the start loading current (resistance) for hardware when doing OCP Test.

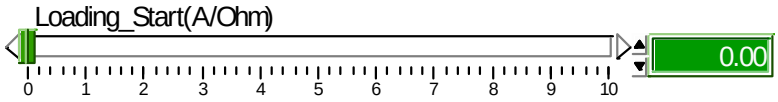


Figure 9-5 OCP – Loading_Start

9.1.5 Loading_End

It sets the end loading current (resistance) for hardware when doing OCP Test.

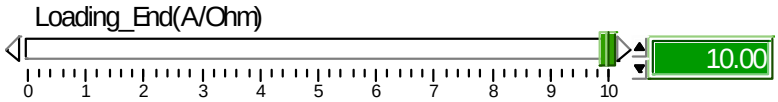


Figure 9-6 OCP – Loading_End

9.1.6 dI_dR

It sets the current increment of each step from Loading Start. Since it is for OCP test, the load gets bigger and bigger. If CC is selected for Mode, the dI value will be positive and if CR is chosen for Mode, then the dR value will be negative.

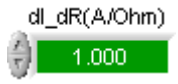


Figure 9-7 OCP – dI_dR

9.1.7 Step_Time

It sets the loading time of each step in second.

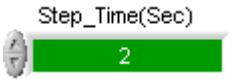


Figure 9-8 OCP – Step_Time

9.1.8 Test on the CH

It specifies the channel to be tested. Only one single channel for test is supported.

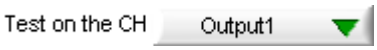


Figure 9-9 OCP – Test on the CH

9.1.9 Loading Spec_H

It sets the high limit spec for OCP measurement.

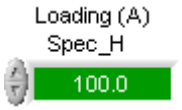


Figure 9-10 OCP – Loading Spec_H

9.1.10 Loading Spec_L

It sets the low limit spec for OCP measurement.

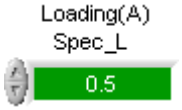


Figure 9-11 OCP – Loading Spec_L

9.1.11 Trigger On

Click this button will start loading current for OCP test.

Figure 9-12 Trigger on

9.1.12 Loading Display

It shows the present measured current once the test starts.

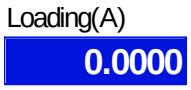


Figure 9-13 OCP – Loading Display

9.1.13 Voltage Display

It shows the present measured output voltage once the test starts.

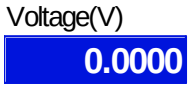


Figure 9-14 OCP – Voltage Display

9.1.14 Max. Power Display

It shows the maximum power measured at present once the test starts.

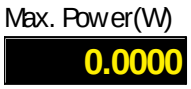


Figure 9-15 OCP – Max. Power Display

9.1.15 Loading_set

It shows the present used load current once the test starts.

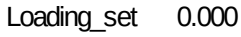


Figure 9-16 OCP – Loading_set

9.1.16 Step_Now

It shows the number of step tested after the test begins.

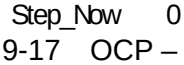


Figure 9-17 OCP – Step_Now

9.1.17 I/R_step

It shows the increment (positive) of current or decrement (negative) of resistance after the test begins.

Figure 9-18 OCP – I/R_Step

9.1.18 OCP Waveform Chart

It shows the X-Y waveform chart of current and voltage. When the test begins the software will keep reading the present voltage/current following different loading current. This Waveform Chart is a dynamic display and it shows the point of all steps where the Y-axis is an Auto Scale of voltage and X-axis is the scale of loading current.

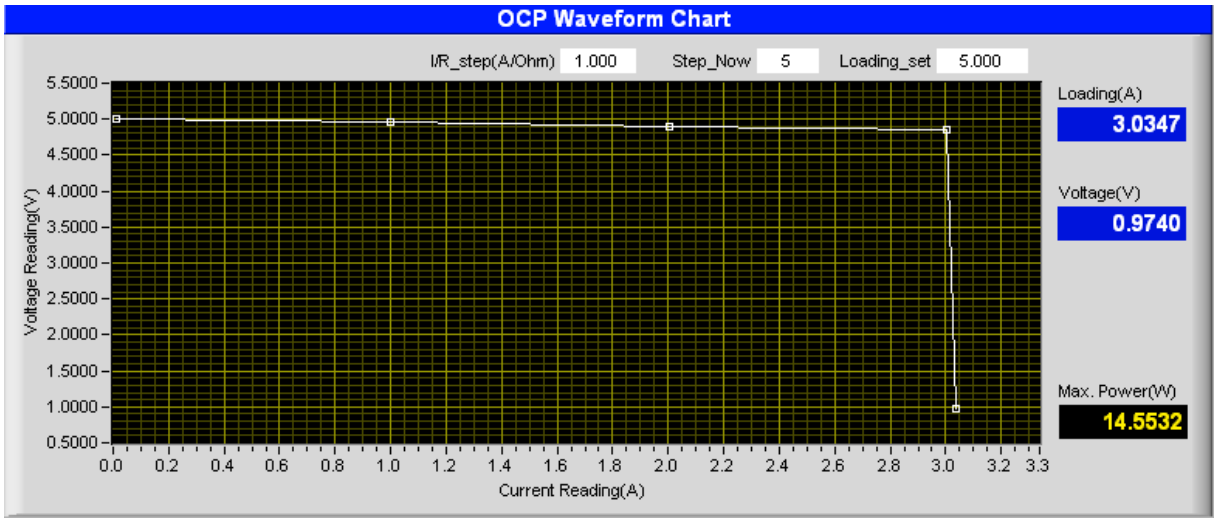


Figure 9-19 OCP Waveform Chart

9.1.19 PASS/FAIL

It shows if the measured value is within the Spec range after tested. It shows PASS in green if the measurement is within the Spec and shows FAIL in red if otherwise.

Figure 9-20 OCP - PASS/FAIL

9.2 SAVE AS, OPEN &BACK

The function of these three buttons is same as Hardware Setting Function; see section 4.4 and 4.5 for detail information.

9.3 Report

OCP test provides a simple, pure text report in *.txt format. See Section 7.10 for the detail description of report function and its file path as well as filename.

9.3.1 Example of OCP Test Report

Chroma DC Load OCP Test Report

---------- Setting ----------

Channel Name	Mode	Load_S (A/Ohm)	Load_E (A/Ohm)	dI_dR (A/Ohm)	V_trig (V)	Step_T (Sec)	Init_T (Sec)
Output1	CCL	0.00	10.00	1.000	1.00	2.0	0.5

---------- Reading ----------

Test Result ----------PASS

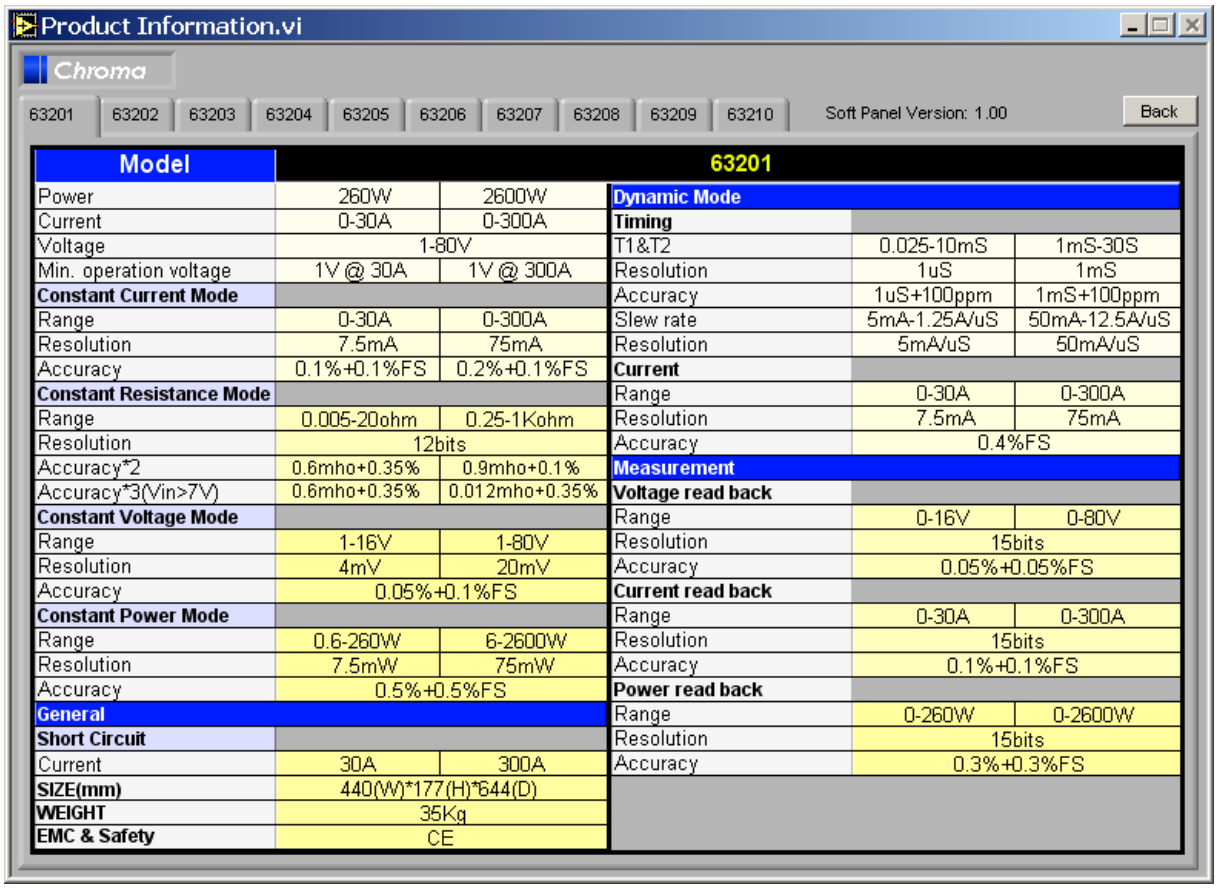
Loading Spec_H	OCP Point(A)	Loading Spec_L
100.0	3.0347	0.5

Max power(W):14.5532

Step	V_Read(V)	I_Read(A)
0	5.0090	0.0135
1	4.9520	1.0018
2	4.9000	2.0031
3	4.8450	3.0038
4	0.9740	3.0347

10. Product Information

This window is easy for users to check the specifications of each model. The models included in the table are 63201, 63202, 63203, 63204, 63205, 63206, 63207, 63208, 63209, and 63210. Users can click the Model Name on each tab to go to the individual specification page.



Model	63201	
Power	260W	2600W
Current	0-30A	0-300A
Voltage	1-80V	
Min. operation voltage	1V @ 30A	1V @ 300A
Constant Current Mode		
Range	0-30A	0-300A
Resolution	7.5mA	75mA
Accuracy	0.1%+0.1%FS	0.2%+0.1%FS
Constant Resistance Mode		
Range	0.005-20ohm	0.25-1Kohm
Resolution	12bits	
Accuracy*2	0.6mho+0.35%	0.9mho+0.1%
Accuracy*3(Vin>7V)	0.6mho+0.35%	0.012mho+0.35%
Constant Voltage Mode		
Range	1-16V	1-80V
Resolution	4mV	20mV
Accuracy	0.05%+0.1%FS	
Constant Power Mode		
Range	0.6-260W	6-2600W
Resolution	7.5mW	75mW
Accuracy	0.5%+0.5%FS	
General		
Short Circuit		
Current	30A	300A
SIZE(mm)	440(W)*177(H)*644(D)	
WEIGHT	35Kg	
EMC & Safety	CE	

Dynamic Mode		
Timing		
T1&T2	0.025-10mS	1mS-30S
Resolution	1uS	1mS
Accuracy	1uS+100ppm	1mS+100ppm
Slew rate	5mA-1.25A/uS	50mA-12.5A/uS
Resolution	5mA/uS	50mA/uS
Current		
Range	0-30A	0-300A
Resolution	7.5mA	75mA
Accuracy	0.4%FS	
Measurement		
Voltage read back		
Range	0-16V	0-80V
Resolution	15bits	
Accuracy	0.05%+0.05%FS	
Current read back		
Range	0-30A	0-300A
Resolution	15bits	
Accuracy	0.1%+0.1%FS	
Power read back		
Range	0-260W	0-2600W
Resolution	15bits	
Accuracy	0.3%+0.3%FS	

Figure 10-1 Product Information Window

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