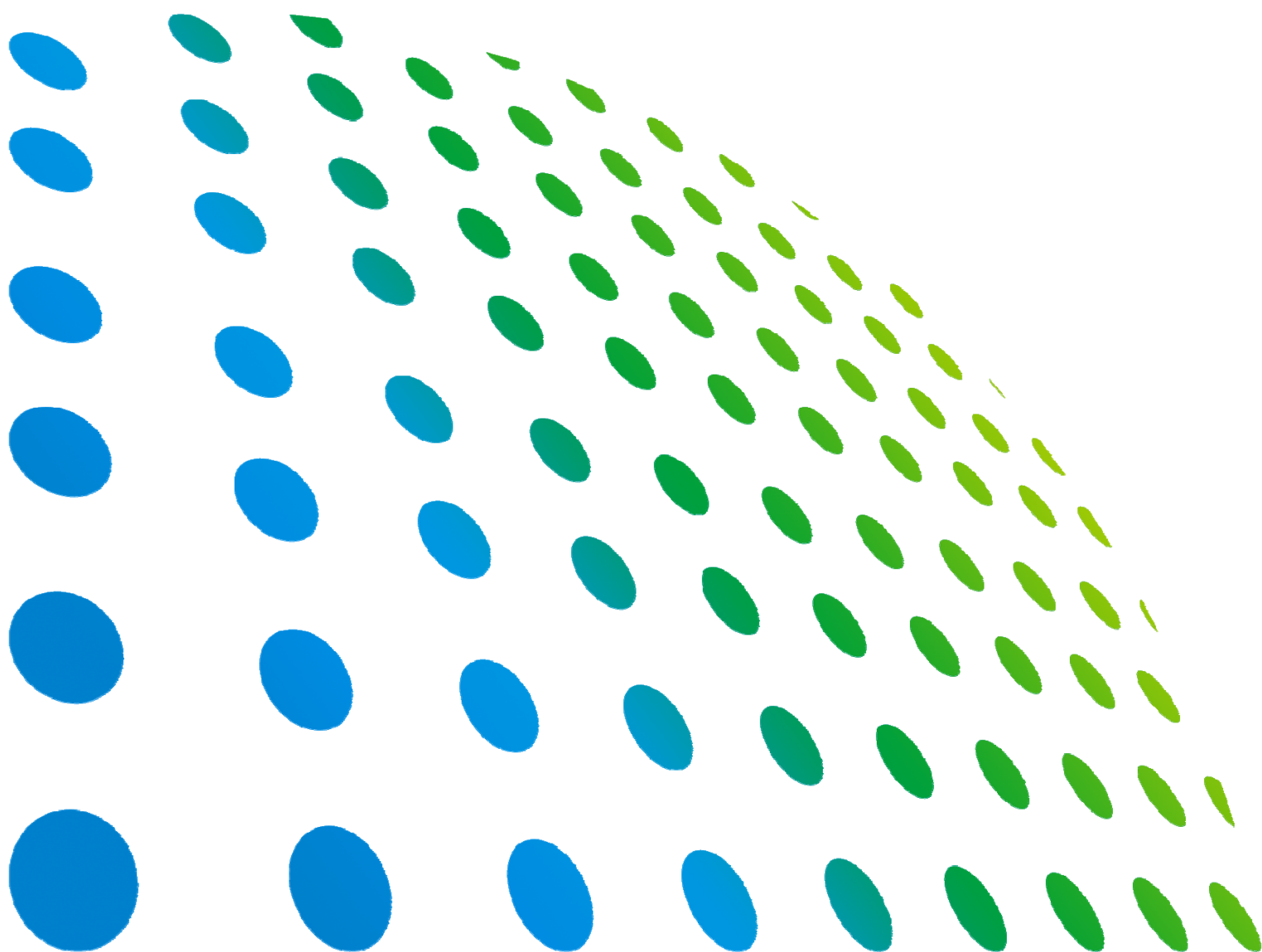


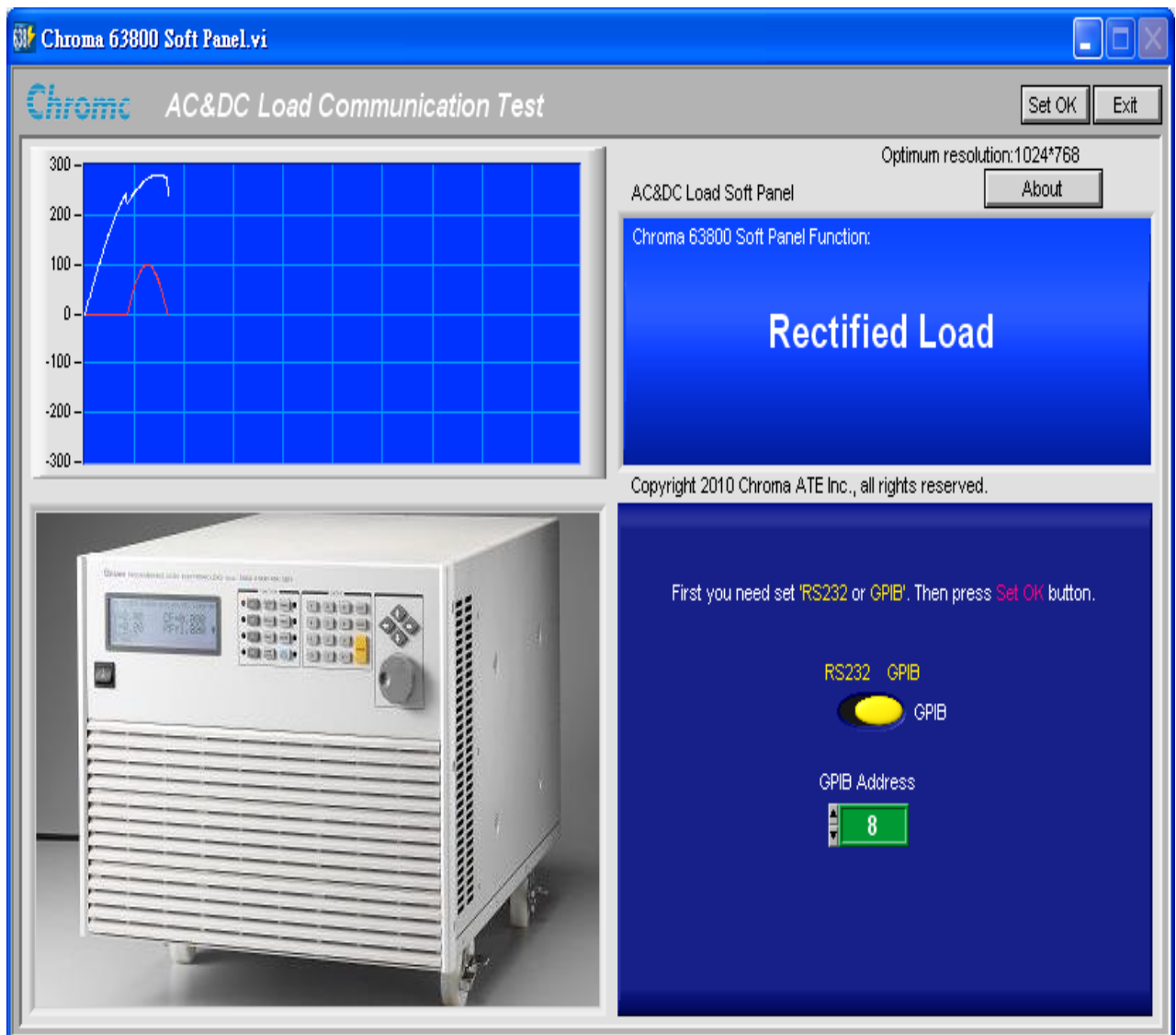


**Programmable AC/DC  
Electronic Load  
63800 Series  
Soft Panel User's Manual**





# Programmable AC/DC Electronic Load 63800 Series Soft Panel User's Manual



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# Revision History

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

Date	Version	Revised Sections
Aug. 2009	1.0	Complete this manual.
Jan. 2013	1.1	<p>Add the following:</p> <ul style="list-style-type: none"><li>– the section of <i>“Three-phase Main Panel”</i>.</li><li>– the section of <i>“Three-phase Program”</i>.</li></ul> <p>Modify the following:</p> <ul style="list-style-type: none"><li>– the Figure 2-2 in the section <i>“Chroma 63800 Soft Panel Setup”</i>.</li><li>– the descriptions and figures in the section of <i>“Installing Necessary Driver”</i>.</li><li>– Figure 3-1 in the section of <i>“Startup Screen”</i>.</li><li>– Figure 4-1 in the section of <i>“Main Panel”</i>.</li><li>– Figure 4-7 in the section of <i>“Chart Display”</i>.</li><li>– the descriptions and figures in the chapter of <i>“Report Panel”</i>.</li><li>– Figure 6-1, Figure 6-2 and Figure 6-7 in the chapter of <i>“Program Panel”</i>.</li></ul>

# Table of Contents

<b>1. System Architecture</b> .....	<b>1-1</b>
1.1 Introduction.....	1-1
1.2 Instrument Supported.....	1-1
1.3 Communication Interface.....	1-1
1.4 Operating Method.....	1-1
1.5 Software and Hardware Requirements.....	1-2
<b>2. Software Installation</b> .....	<b>2-1</b>
2.1 Files in CD.....	2-1
2.2 Chroma 63800 Soft Panel Setup.....	2-1
2.3 Installing Necessary Driver.....	2-4
2.4 Installing GPIB Interface Driver.....	2-9
2.5 Uninstalling Chroma 63800 Soft Panel Software.....	2-9
<b>3. Start Chroma 63800 Soft Panel</b> .....	<b>3-1</b>
3.1 Startup Screen.....	3-1
<b>4. Main Panel</b> .....	<b>4-1</b>
4.1 Using Demo Mode.....	4-1
4.2 Parameter Setting.....	4-1
4.2.1 Mode.....	4-2
4.2.2 Load Setting.....	4-2
4.2.3 Timing.....	4-2
4.2.4 Control.....	4-3
4.3 Measurement.....	4-3
4.4 Chart Display.....	4-3
4.5 Waveform Display.....	4-4
4.6 Status Monitor.....	4-4
4.7 Save As Component.....	4-5
4.8 Open Component.....	4-5
4.9 Back Component.....	4-5
4.10 Exit Component.....	4-6
4.11 Three-phase Main Panel.....	4-6
<b>5. Report Panel</b> .....	<b>5-1</b>
<b>6. Program Panel</b> .....	<b>6-1</b>
6.1 Loading Simulation Waveform.....	6-1
6.2 Parameter Setting.....	6-2
6.2.1 Mode.....	6-2
6.2.2 Load Setting.....	6-2
6.2.3 Control.....	6-4
6.3 Reading Waveform.....	6-4
6.4 Report.....	6-5
6.5 Three-phase Program.....	6-5
<b>7. Product Information</b> .....	<b>7-1</b>





# 1. System Architecture

This chapter mainly describes the structure of Chroma Programmable AC/DC Electronic Load 63800 Series Soft Panel and instrument as well as function can be used. Here, we listed the instrument can be supported by the application program, and communication protocol can be connected with PC to help users understand the environment users need.

## 1.1 Introduction


The application program is only conformance with Chroma Programmable AC/DC Electronic Load 63800 Series instrument. The PC and instrument should be equipped with remote operation interface while using this program, so as to perform transmission & communication by using command.

Users are capable of performing parameter setting inside instrument via the application program, controlled by single unit or single phase in parallel. It can view the measured data and waveform as well as edit loading value varied by time change. Moreover, the program provides parameter store and report functions for users can easy open a saved file from hard disk for execution.

## 1.2 Instrument Supported

Models support Chroma 63800 series programmable AC/DC electronic load as follows:

- A. 63802
- B. 63803
- C. 63804

 **Notice** : The F/W version of 63800 electronic load should be higher than 1.47.

## 1.3 Communication Interface

The communication interface methods between PC and instrument are as follows:

- A. GPIB
- B. RS-232C(Cross)

## 1.4 Operating Method

Using the mouse for clicking and operating as well as coordinating with keyboard input is optimized.

## **1.5 Software and Hardware Requirements**

PC software/hardware system requirements as following are recommended:

- Intel CPU 500MHz or above
- Microsoft Windows 2000 or XP
- Driver: NI VISA Run Time Engine 3.0 above, NI IVI Run Time Engine 1.83
- Hard drive with 400 MB above recommended, 40 MB space minimum
- 256MB memory minimum
- VGA or SVGA color monitor display
- PS2 mouse

## 2. Software Installation

NI VISA Run Time Engine, NI IVI Run Time Engine and NI CVI Run Time Engine drivers should be installed to operating system before operating Chroma 63800 Soft Panel. NI 488.2 driver should be installed while using GPIB card. In the following sections, we will tell you how to install the software on window environment step by step. Please place CD ROM with Chroma 63800 Soft Panel application software to CD drive.

### 2.1 Files in CD

Files in CD are illustrated as *Figure 2-1*, the Manual folder contains Chinese/English Software User's Manual.

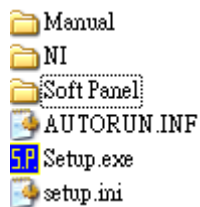


Figure 2-1 Files in CD

### 2.2 Chroma 63800 Soft Panel Setup

1. After placing CD to drive, `Setup.exe` will be auto run and displayed as Figure 2-2 Setup Program Screen. If the program doesn't be auto run, click for running by manual

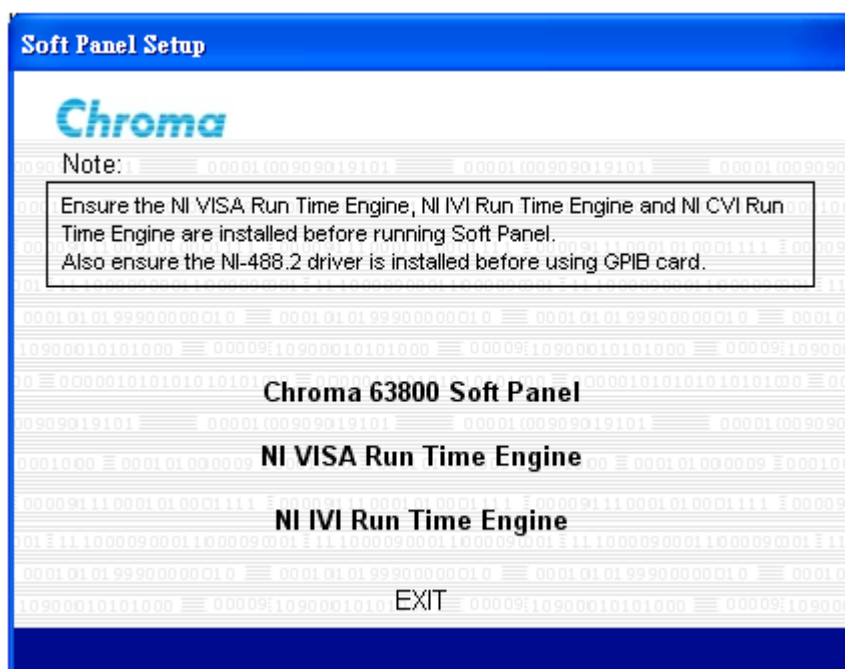


Figure 2-2 Soft Panel Setup Program Screen

2. Click “**Chroma 63800 Soft Panel**”, *Figure 2-3* will be shown firstly.

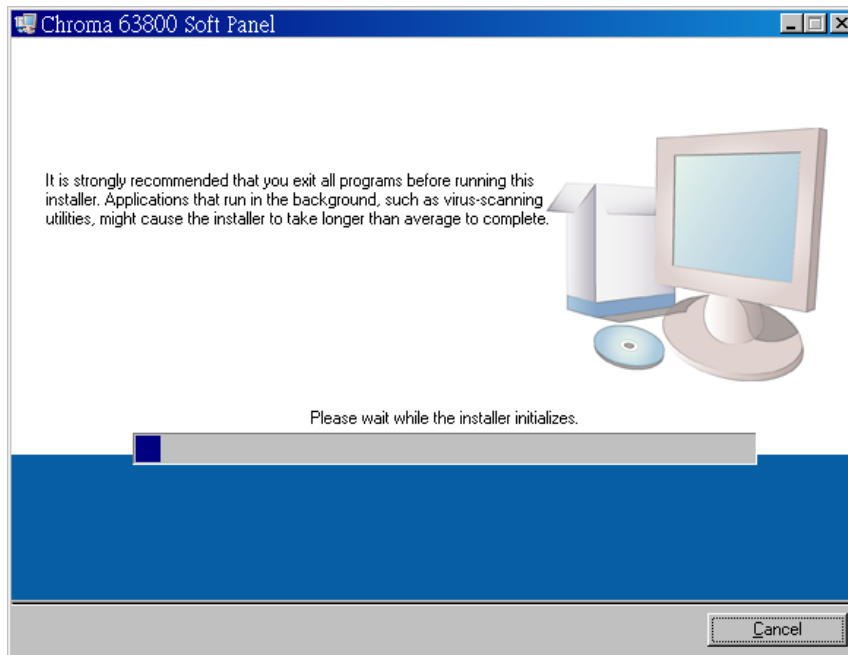


Figure 2-3 Chroma 63800 Soft Panel Startup Setup Screen

3. Select installation directory, we install the program under `C:\Program Files\Chroma\` directory after *Figure 2-4* displayed. If need to change installation directory, click **Browse** to specify installation directory. After the directory specified, click **Next** to go on installing.

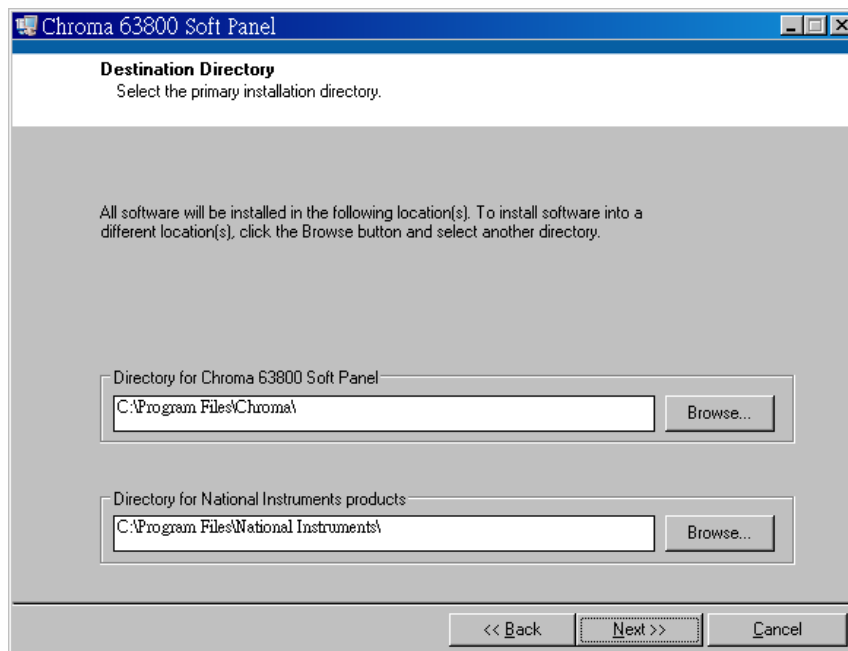


Figure 2-4 Chroma 63800 Soft Panel Select Installation Directory

4. NI software license agreement screen, click “I accept the License Agreement(s)” and click **Next** to go on installing.



Figure 2-5 NI Software License Agreement Screen

5. Prepare to start installation, click **Next** to go on installing.

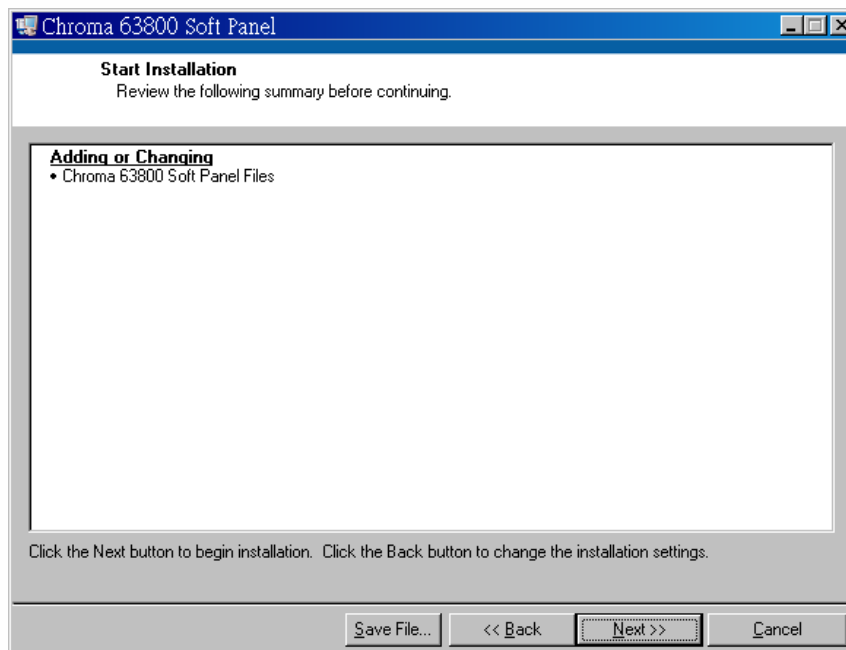


Figure 2-6 Chroma 63800 Soft Panel Prepare to Start Installation Screen

6. If there is any error in installing displayed screen, users can cancel installation by **Cancel**.

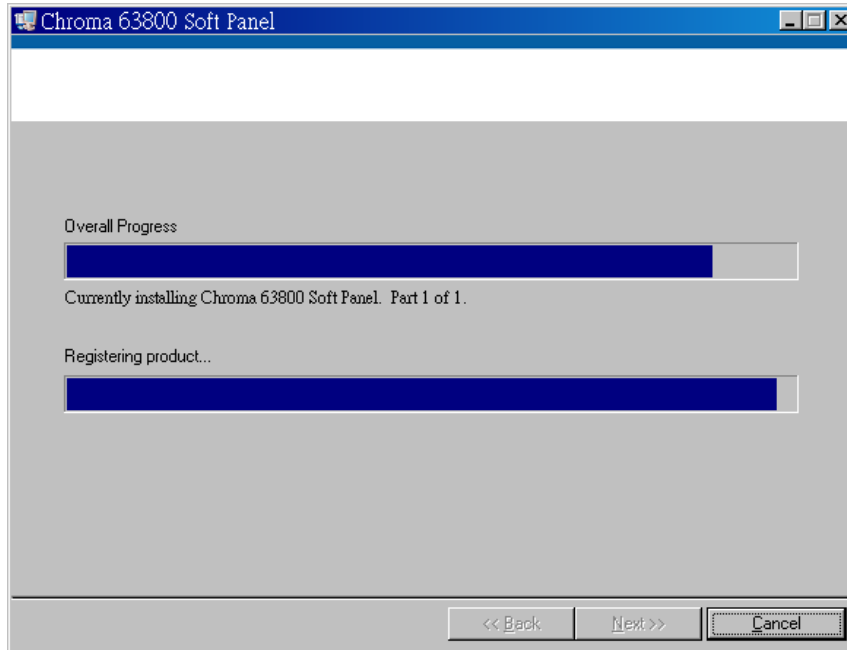


Figure 2-7 Chroma 63800 Soft Panel Installing Displayed Screen

7. Users only need to click **Finish** on Installation Completed Screen. Notice that to restart computer after installation completed.

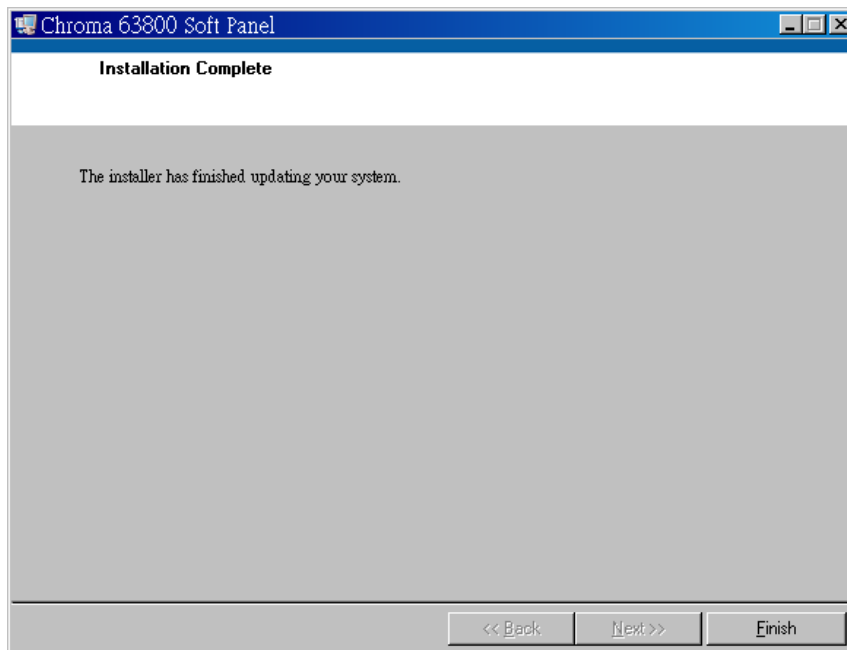


Figure 2-8 Chroma 63800 Soft Panel Installation Completed Screen

## 2.3 Installing Necessary Driver

There are two versions of NI VISA Run Time Engine 3.0 and 4.1 (default) which are installed in NI directory of the Soft Panel CD. These two versions are certified by Chroma for users applied but also can follow different operating system to select appropriate VISA version. For more information, please refer <http://www.ni.com/support/zht/>.

This section can be skipped if NI VISA Run Time Engine driver has been installed.

1. Install NI VISA 4.1 driver. Double click the word of “**NI VISA Run Time Engine**” on *Figure 2-2 Setup Program Screen* and after initialized by the program then can enter *Figure 2-9 Installation Screen*.



Figure 2-9 NI VISA 4.1 Driver Installation Screen

2. Other applications under executing should be ended firstly, next to click **Next** to start installing. Enter the next installation procedure for users to decide installation directory, the installation screen is as *Figure 2-10*.

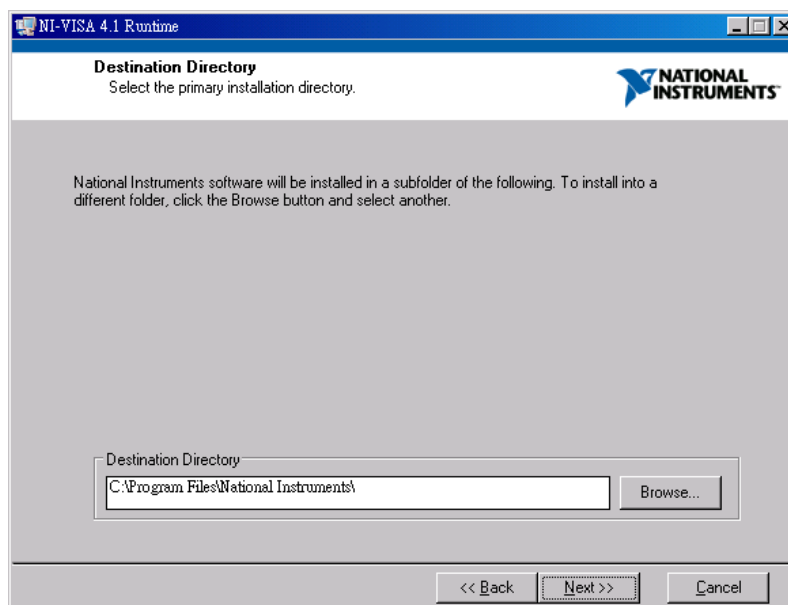


Figure 2-10 Destination Directory Installation Screen

3. Follow installation hint to click **Next** sequentially for completing all installation procedures. The screen of Installation Completed is shown as *Figure 2-11*.

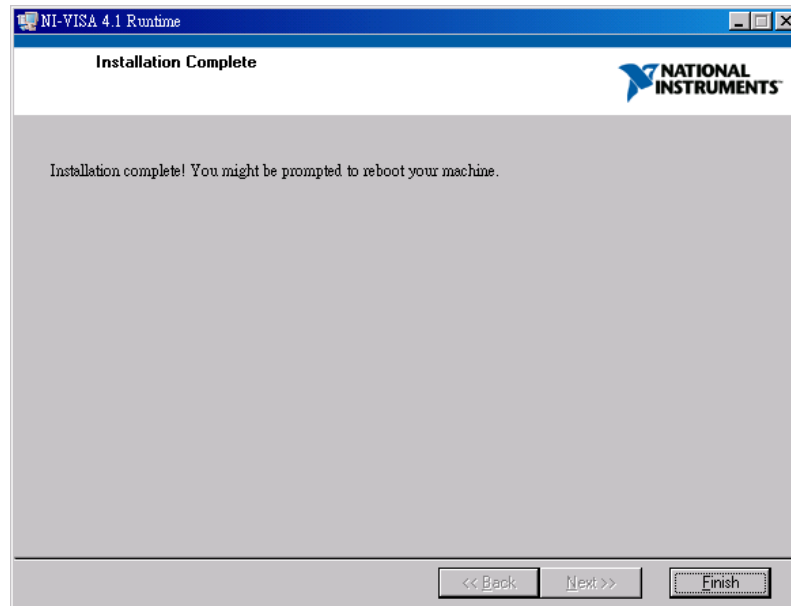


Figure 2-11 Complete All Installation Procedures Screen

4. NI VISA driver supported the operating system needs to be upgraded in the future. The related upgrade information to be downloaded please refer <http://www.ni.com/support/zht/>.
5. Install NI IVI Run Time Engine driver. Click the word of “NI IVI Run Time Engine” on Figure 2-2 then can enter the following screen to start to install this driver and next to click **Next** to go on installing.



Figure 2-12 NI IVI NI IVI Start Installation Screen

6. NI IVI license agreement, click “I accept the license agreement” and click **Next** to go on installing.



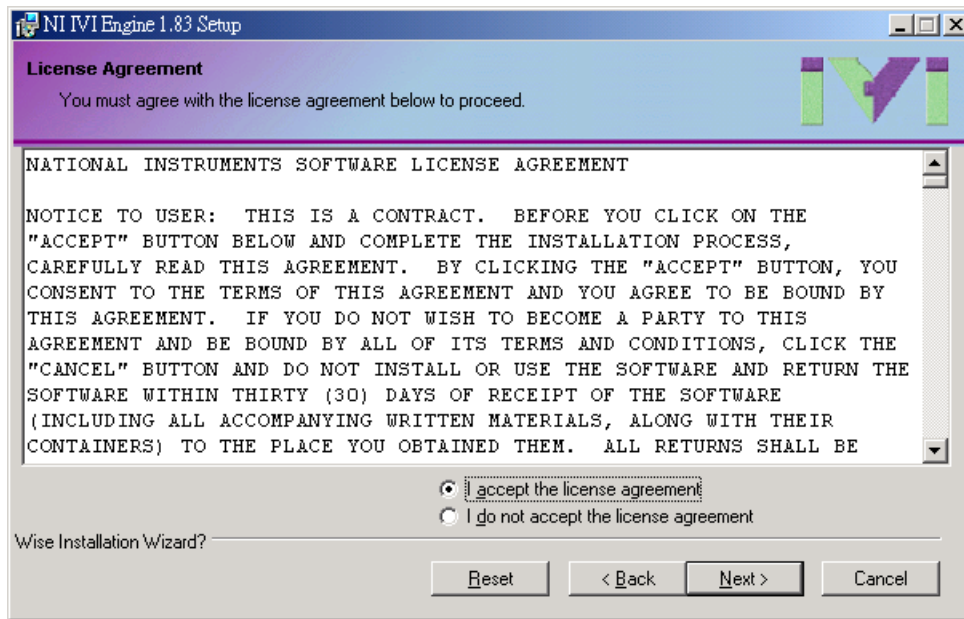


Figure 2-13 NI VISA License Agreement Screen

7. NI IVI installation feature determination screen, click **Next** to go on installing.

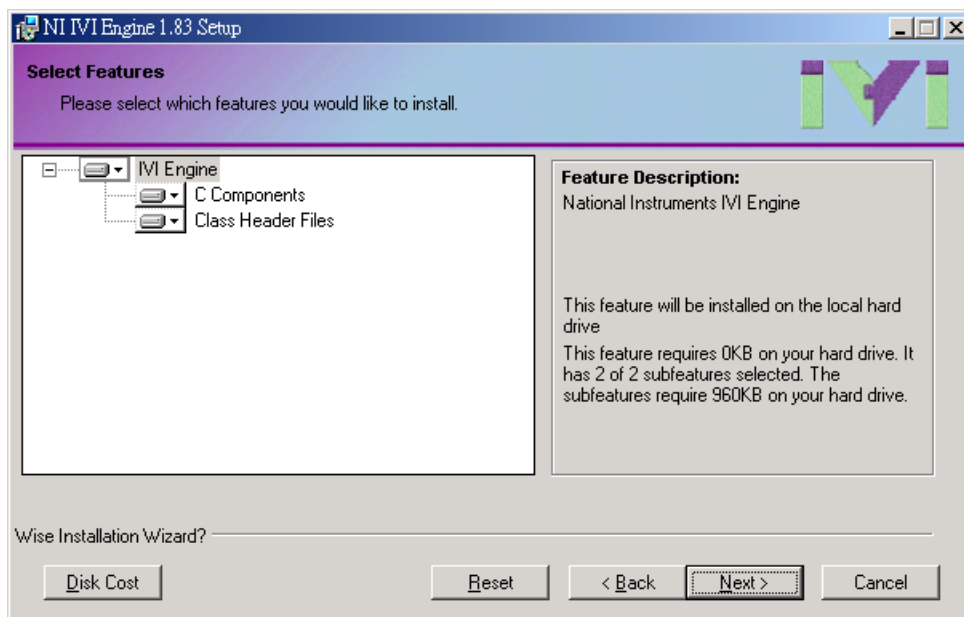


Figure 2-14 NI IVI Installation Feature Determination Screen

8. NI IVI ready to start installation screen, click **Next** to go on installing.

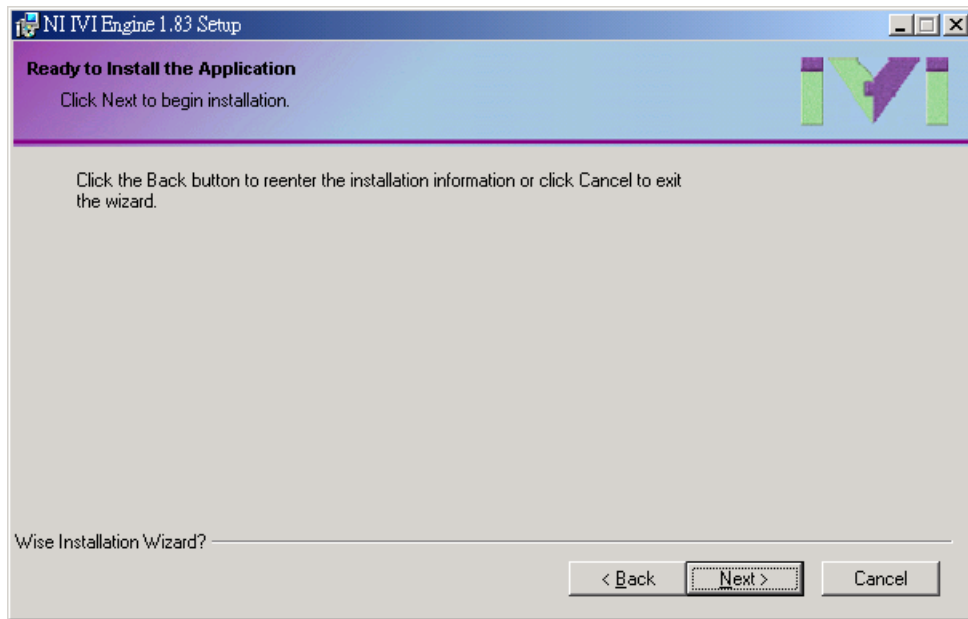


Figure 2-15 NI IVI Ready to Begin Installation Screen

9. NI IVI installing screen, if there is any error users can cancel installation by **Cancel**.

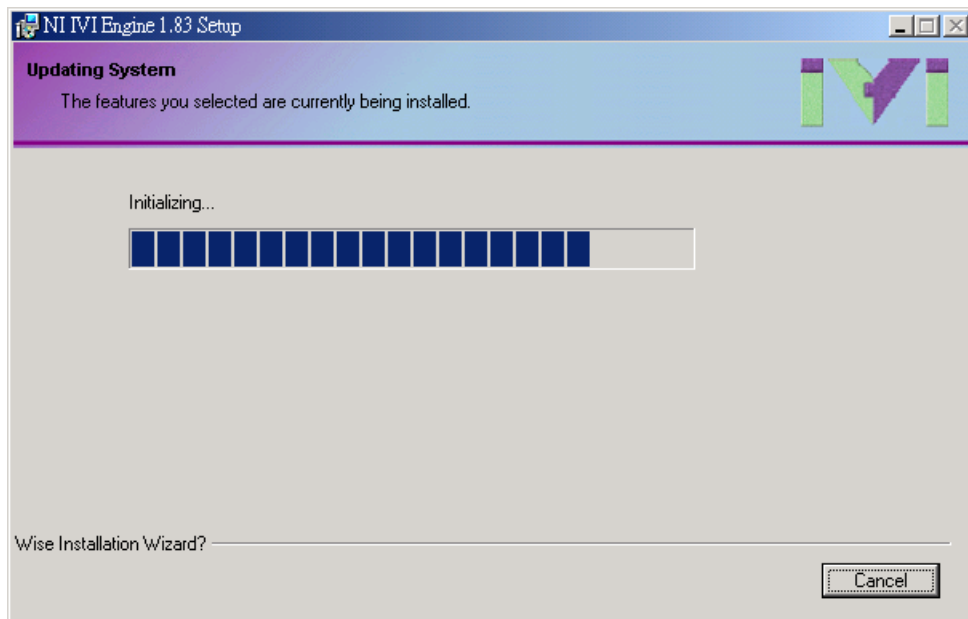


Figure 2-16 NI IVI Installing Screen

10. NI IVI installation complete screen, users just need to click **Finish** for completion.



Figure 2-17 NI IVI Installation Complete Screen

## 2.4 Installing GPIB Interface Driver

According to GPIB interface driver to install procedures in manual. It is unnecessary to install this driver if RS232C interface used.

## 2.5 Uninstalling Chroma 63800 Soft Panel Software

If you want to remove Chroma 63800 Soft Panel software, we suggest you to uninstall it by clicking 'Start' button, then 'Setting' → 'Control Panel' → 'Install or Uninstall Program', and uninstall software related programs.



## 3. Start Chroma 63800 Soft Panel

### 3.1 Startup Screen

Click 'Chroma 63800 Soft Panel' on 'Start\Program File\Chroma 63800 Soft Panel' after installation completed is shown as *Figure 3-1*.

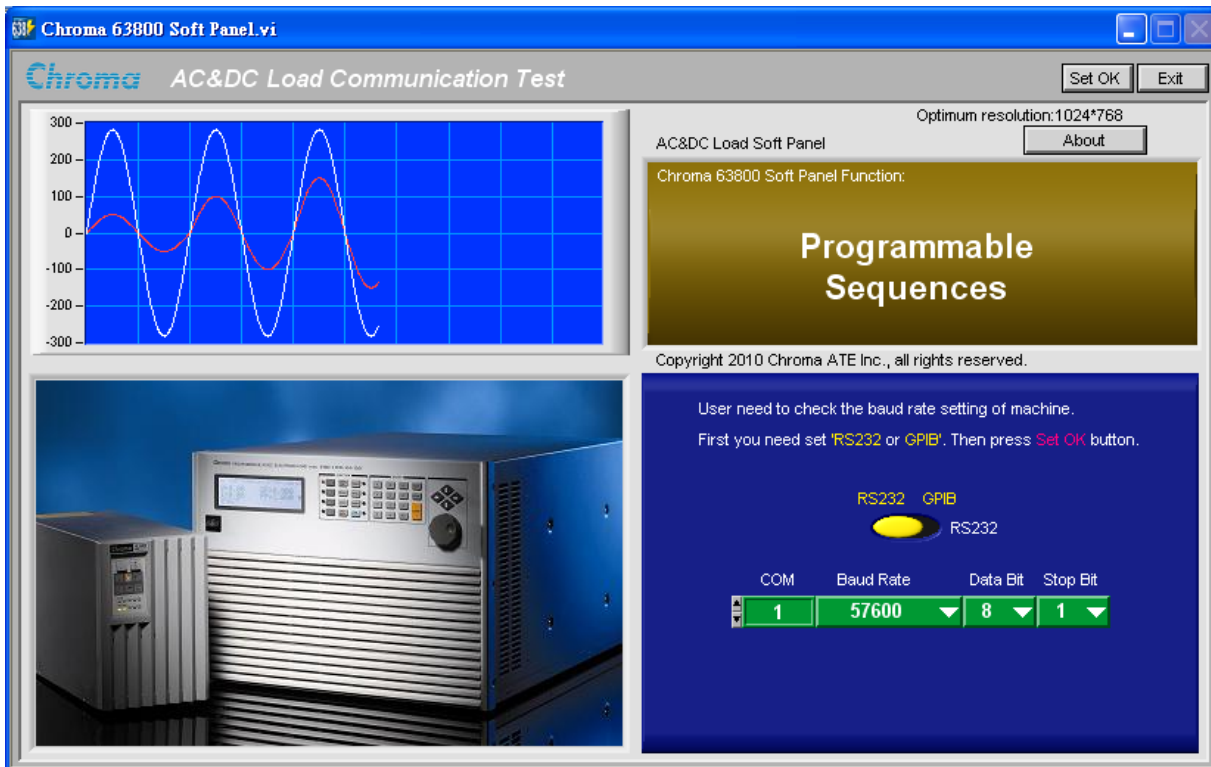


Figure 3-1 Chroma 63800 Soft Panel Startup Screen

Description:

- a. Users need to decide communication protocol *i.e.* transmission command between PC and instrument for GPIB or RS232 method to control. There are corresponding parameters components will be appeared while using such as GPIB selected then GPIB Address will be appeared, RS232 selected then COM, Baud Rate, Data Bit and Stop Bit will be appeared for users setting.



Figure 3-2 Select Communication Interface Setting Component

- b. The parameters for setting communication interface are identical with communication interface parameters on instrument currently. For instance, GPIB Address setting on instrument is 8 thus GPIB Address component on Soft Panel also needs to set as 8.



Figure 3-3 Communication Interface GPIB Address Setting Component

- c. After confirming the communication protocol correctly, press **Set OK** component on Soft Panel. Meanwhile, the program will start to do initialized communication with instrument to enter next screen.



Figure 3-4 Communication Interface Setting Complete Confirm Component

## 4. Main Panel

If the instrument is under single phase status, press **Set OK** on startup screen then will enter the panel as *Figure 4-1*.

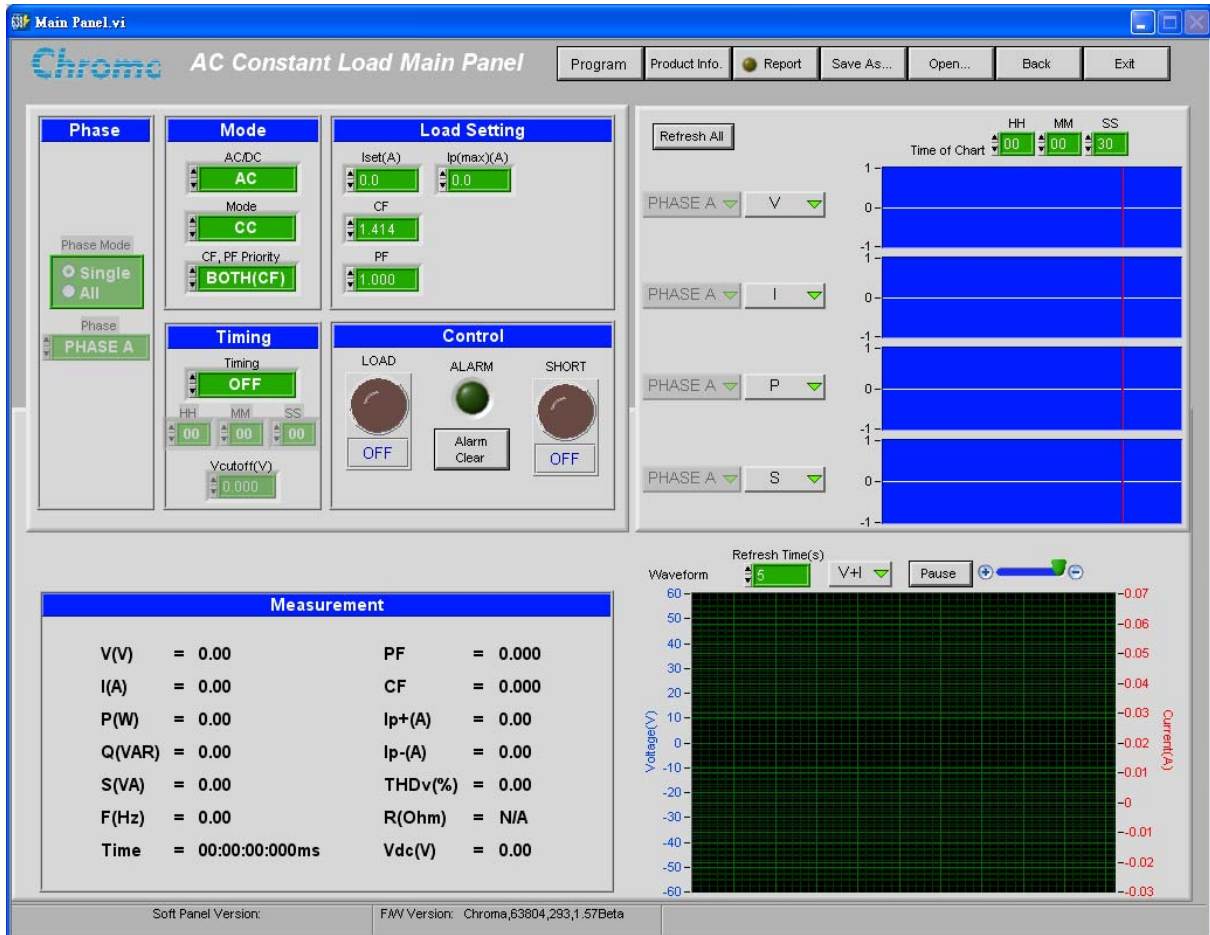


Figure 4-1 Main Panel

The bottom of the panel will display F/W version information if successfully. If communication protocol has error then it will show Connection Error.

### 4.1 Using Demo Mode

If users are without any hardware connected, the program will enter Demo Mode. Meanwhile, users can enter Soft Panel to understand how many functions included.

### 4.2 Parameter Setting

This area is for setting load mode, load parameter, Timing, LOAD ON/OFF and SHORT ON/OFF of electronic load as well as alarm clear of electronic load.

## 4.2.1 Mode

It is for setting AC/DC, MODE (CC, CR, CP, CV, RLC, RLC CP, INRUSH, DC RECT.) and CF PF Priority of electronic load.

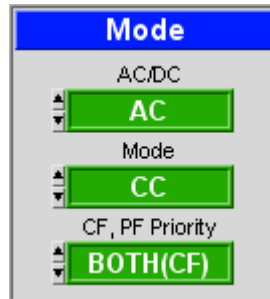


Figure 4-2 Mode Screen

## 4.2.2 Load Setting

It is for setting load parameter of electronic load such as Iset, CF, PF and Ip(max) parameters will be appeared for setting as it is AC or CC.

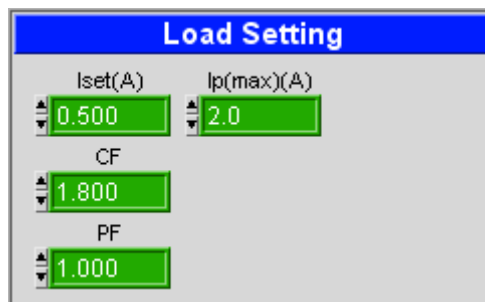


Figure 4-3 Load Setting Screen

## 4.2.3 Timing

It is for setting Timing Mode, Time Out and Vcutoff of electronic load.

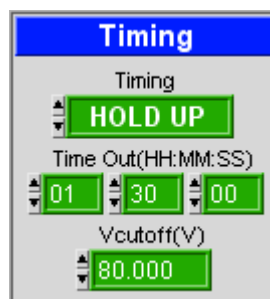


Figure 4-4 Timing Screen



## 4.2.4 Control

It is for setting LOAD ON/OFF, SHORT ON/OFF of electronic load. The ALARM LED will be blinking while alarming, meanwhile click **Alarm Clear** for releasing alarm.

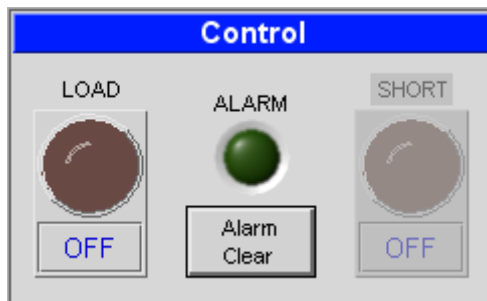


Figure 4-5 Control Screen

## 4.3 Measurement

It is for displaying measurement of electronic load.

Measurement					
V(V)	=	118.40	PF	=	0.898
I(A)	=	0.50	CF	=	1.803
P(W)	=	53.23	I <sub>p+</sub> (A)	=	0.90
Q(VAR)	=	26.15	I <sub>p-</sub> (A)	=	0.89
S(VA)	=	59.31	THD <sub>v</sub> (%)	=	5.24
F(Hz)	=	60.00	R(Ohm)	=	N/A
Time	=	00:02:37:561mS	V <sub>dc</sub> (V)	=	-0.09

Figure 4-6 Measurement Screen

## 4.4 Chart Display

There are four sets of Charts can display measurement value curve. According to operation mode to select different measurement parameters, also can select Off to pause curve modification. Click **Refresh All** button can update Chart curve from start. Time of Chart can set the entire Chart time, *i.e.* users desire to observe voltage, current and power variant curve within 1 hour. The fastest chart sampling time is 1 sec, sampling time will be increased followed by Time of Chart increment. It is automatically judged by the program.

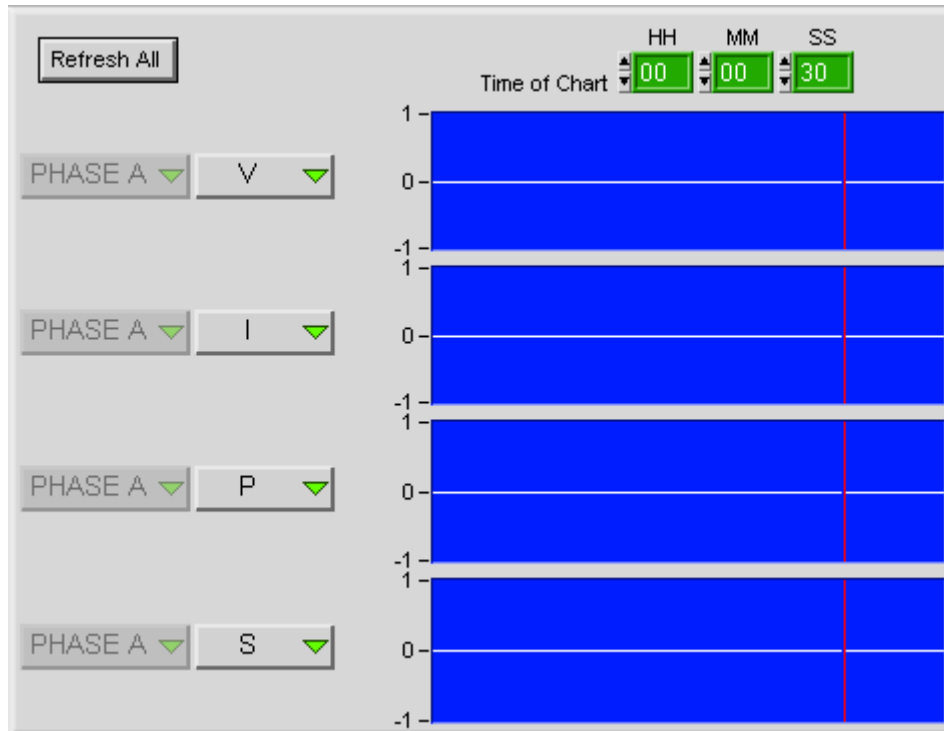


Figure 4-7 Chart Display

## 4.5 Waveform Display

It displays voltage/current waveform electronic load captured can select to display V or I or V+I. Use Refresh Time to set interval seconds to capture a waveform, also can pause capture and zoom in/out waveform display. This function is not applicable to RS232 and Data Bit equal to 7. Since the waveform data is large, it needs longer time to transmit data. It can enlarge Refresh Time or RS232 Baud Rate to avoid affecting other control components or displayed fluency.

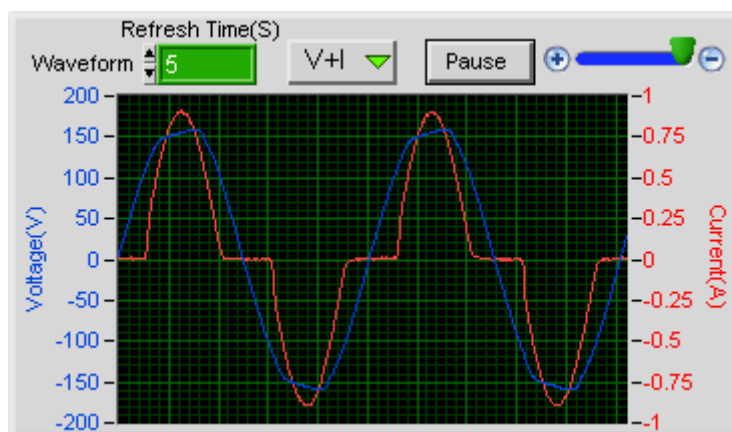


Figure 4-8 Waveform Display

## 4.6 Status Monitor

When the program detected the instrument abnormal status occurred, such as over voltage,

over current protection, etc then the dialog box will be appeared as *Figure 4-9*. Concurrently, users need to clear abnormal status as soon as possible.

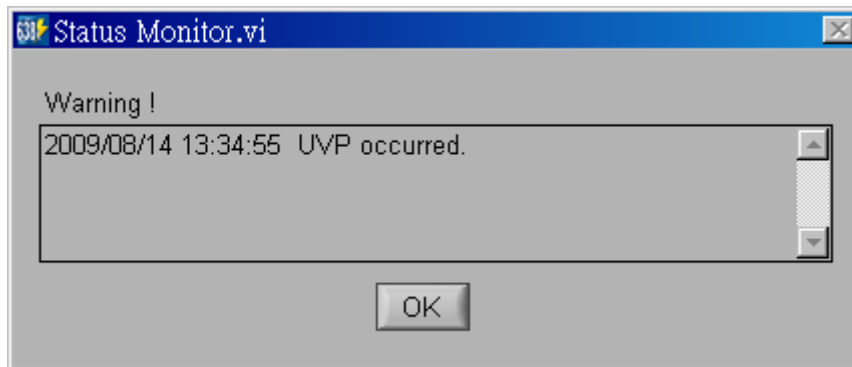


Figure 4-9 Status Monitor Screen

## 4.7 Save As Component

Click this button can save setting parameter currently on screen as a .Man file.

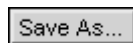


Figure 4-10 Save Currently Setting Button

Users saved the parameter currently so as to open for use directly as opening Soft Panel next time. Click **Save As...**, concurrently only select the saved directory and give a file name in extension .Man. Therefore, users can save various values as different files via this setting. These files will occupy disk for some spaces, if disk space enough can store versatile setting files.

## 4.8 Open Component

Click this button can open a file with extension .Man saved in disk, thus can simplify input parameters and also can avoid input error occurred.



Figure 4-11 Open File Button

## 4.9 Back Component

Click this button to escape the window and back to previous window.

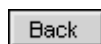


Figure 4-12 Back Button

## 4.10 Exit Component

Click this button to exit from Soft Panel.



Figure 4-13 Exit Button

## 4.11 Three-phase Main Panel

If the instrument is under three-phase status, press **Set OK** on startup screen then will enter the panel as *Figure 4-14*.

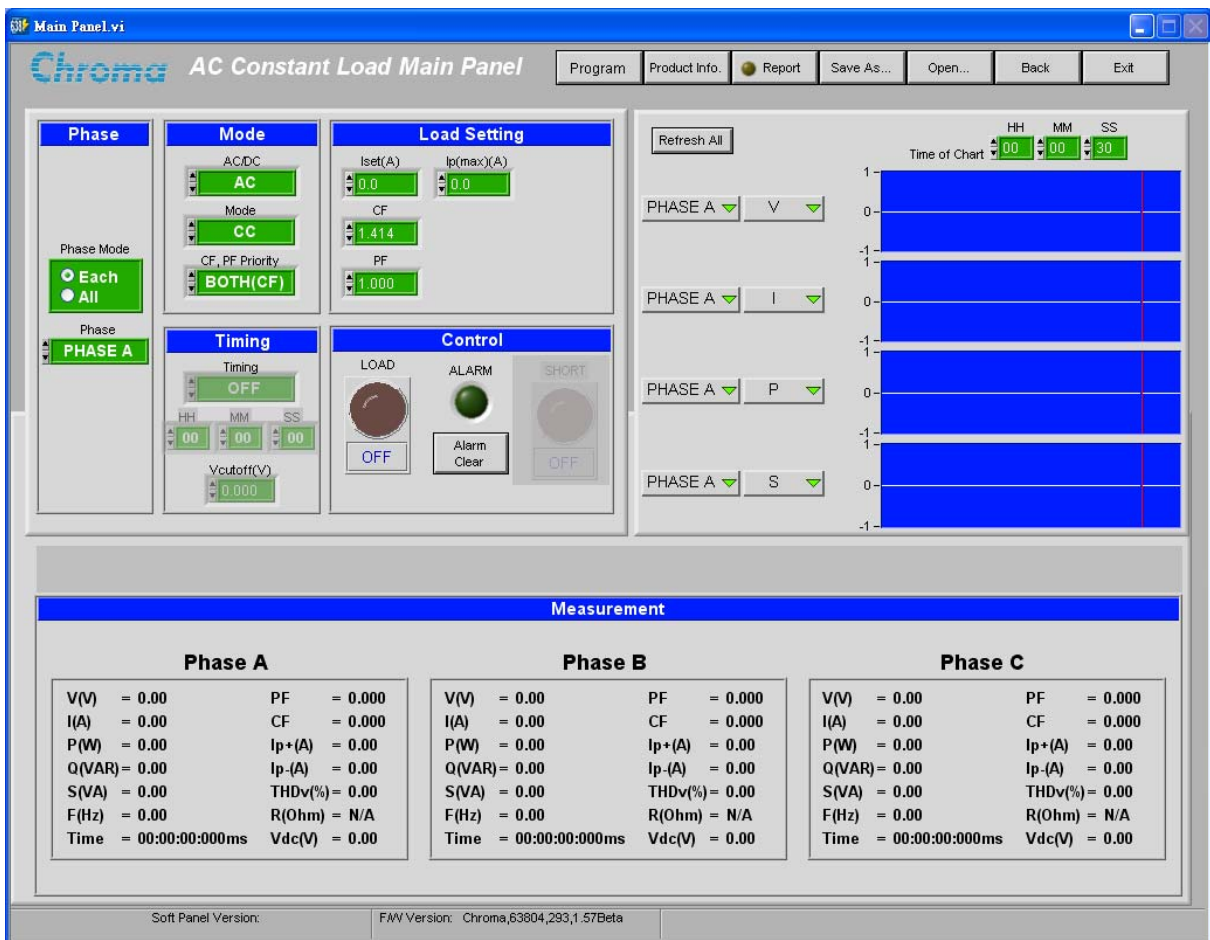


Figure 4-14 Three-phase Main Panel Page

The Phase field at the upper left side of screen (*Figure 4-15*) for selecting Each (for setting three phases individually) or All (set the same parameter for three phases).

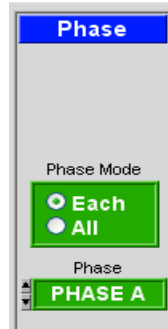


Figure 4-15 Phase Field

When "Each" is selected, the field at lower side for selecting the parameter Phase to be set (Figure 4-16).

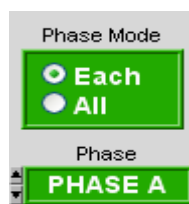


Figure 4-16

When "All" is selected, the field at lower side will be adjusted to PHASE ALL (Figure 4-17).

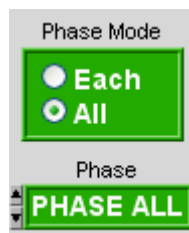


Figure 4-17

Three-phase condition is displayed by Chart.

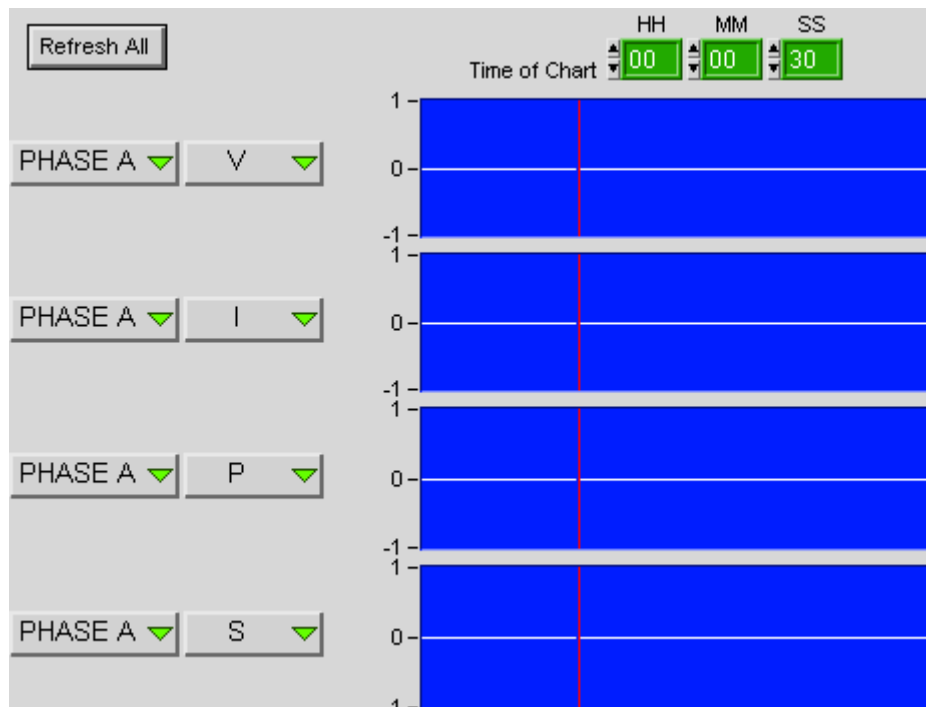


Figure 4-18

Three-phase displayed method is roughly the same as single phase for adjusting the Phase which is before various measurement curves as *Figure 4-18* shown. It can specify which phase will be shown on measurement curve for users.

## 5. Report Panel

Click **Report** on Main Panel to enter the panel under single phase condition as *Figure 5-1* shown. It can record measurement value and save the value to file.

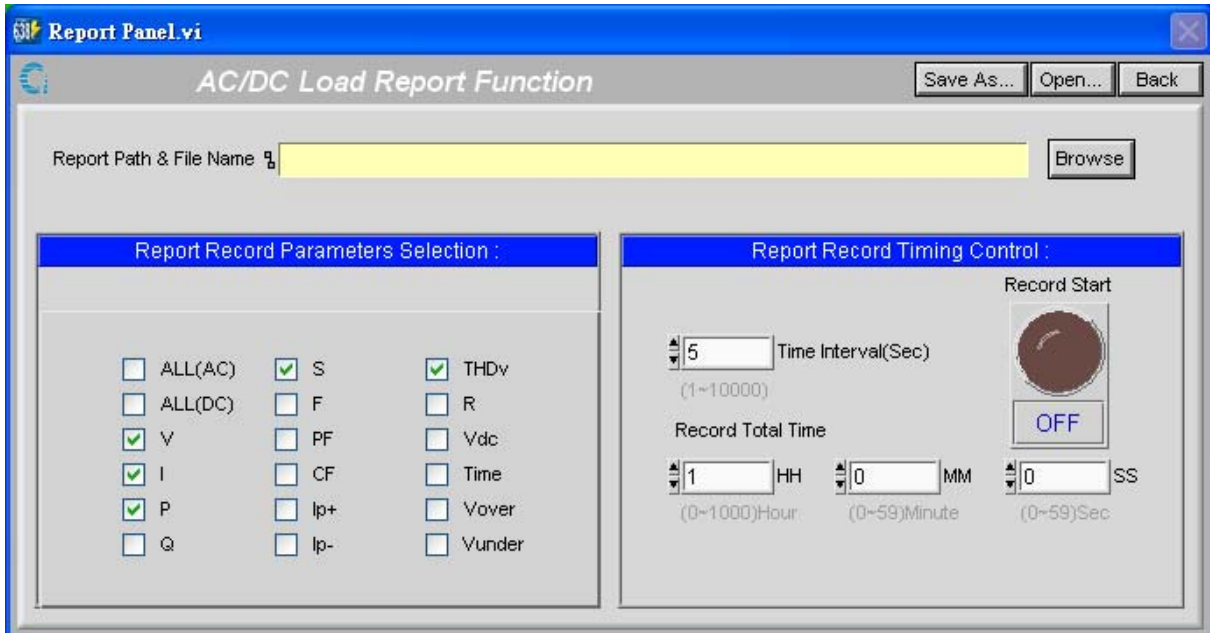


Figure 5-1 Report Panel

Firstly, click **Browse** to select directory and file name desired to record, select the parameter desired to record at left side of Report Panel then set Record Total Time and Time Interval at right side of panel, click **Record Start** to start record finally. About functions of **Save As...**, **Open...** and **Back** buttons, please refer *section 4.7, 4.8* and *4.9*. The report is a pure text file in \*.txt, please see *Figure 5-2* for detail format.

```

Chroma 63800 AC/DC Load Test Report
===== SETTING =====
Mode          CF/PF          Iset (A)      CF           PF           Ip(max)(A)
AC/CC        BOTH(CF)      0.500        1.414        1.000        2.0

===== MEASUREMENT =====
Date/Time     V(V)          I(A)          P(W)         S(VA)        THDv(%)
-----
2012/9/25 15:42:46  50.02         0.50         24.96        25.02        0.31
2012/9/25 15:42:51  49.98         0.50         24.98        25.04        0.17
2012/9/25 15:42:56  49.99         0.50         24.97        25.03        0.32
2012/9/25 15:43:01  50.09         0.50         24.98        25.09        0.48
2012/9/25 15:43:06  49.97         0.50         24.98        25.03        0.27
2012/9/25 15:43:11  49.97         0.50         24.97        25.03        0.11

```

Figure 5-2 Report Format

### Three-phase Report Window

Click **Report** on Main Panel to enter the panel under three-phase condition as *Figure 5-3* shown. It can record measurement value and save the value to file.

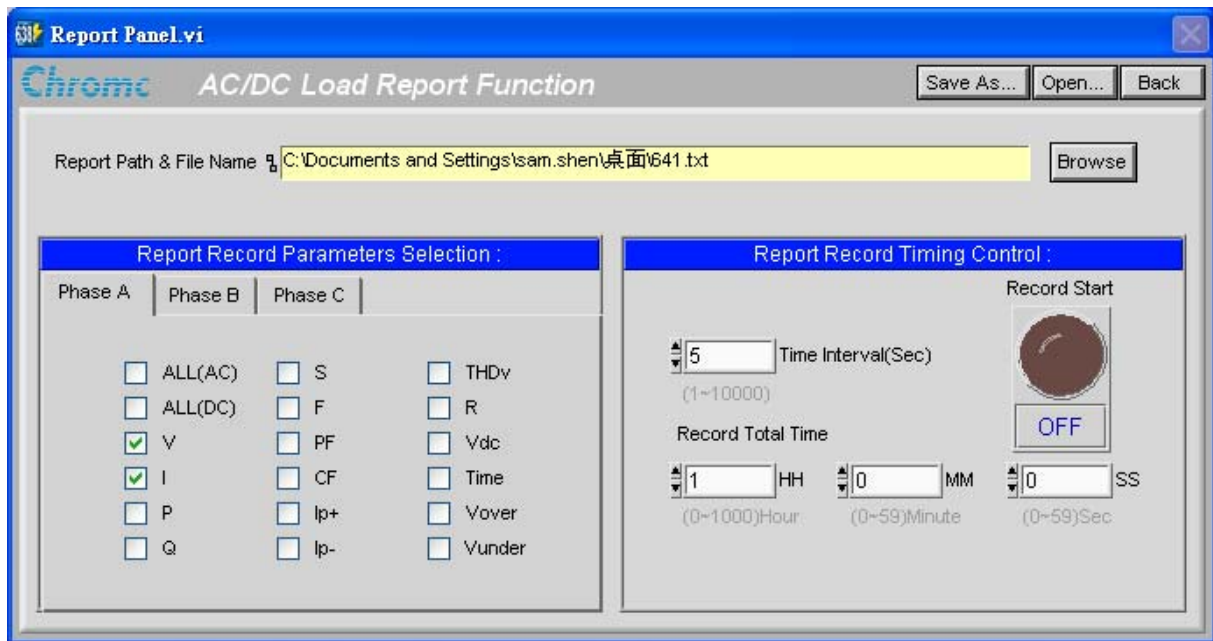


Figure 5-3 Three-phase Report Panel

Users can select Report recorded value in each phase separately as *Figure 5-4* shown.

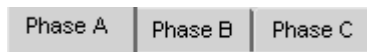


Figure 5-4 Report Record Phase Selection Field

About the format, please refer *Figure 5-5*.

```

Chroma 63800 AC/DC Load Test Report
=====
Mode          CF/PF      Iset(A)    CF          PF          Ip(max)(A)
AC/CC        BOTH(CF)    2.0        1.414       1.000       5.0

=====
Date/Time    A_V(V)    A_I(A)    B_V(V)    B_I(A)    C_V(V)    C_I(A)
-----
2012/9/25 16:00:44  49.82     2.00     48.20     2.00     49.27     2.00
2012/9/25 16:00:49  49.81     1.99     48.17     2.00     49.28     2.00
2012/9/25 16:00:54  49.82     2.00     48.20     2.00     49.27     1.99
2012/9/25 16:00:59  49.81     2.00     48.23     2.00     49.31     2.00
2012/9/25 16:01:04  49.80     2.00     48.17     2.00     49.28     2.00
2012/9/25 16:01:09  49.82     2.00     48.21     2.00     49.35     1.99
2012/9/25 16:01:14  49.82     2.00     48.19     2.00     49.28     1.99
    
```

Figure 5-5 Three-phase Report Format



## 6. Program Panel

Click **Program** on Main Panel to enter the panel under single phase condition as *Figure 6-1* shown. It provides users to edit specified loading waveform for controlled instrument. It is divided into List and Step edit modes. List mode can arbitrary edit varied loading waveform in specification of single unit and also can execute repeatedly. Step mode is editing specified rising (increment) or falling (decrement) loading waveform. According to Reading Interval (Sec) time can continuously draw measurement value curve of voltage, current, power as single unit loading. It also can record measurement value to report. Status Monitor and other buttons descriptions please see related sections in *chapter 4*.

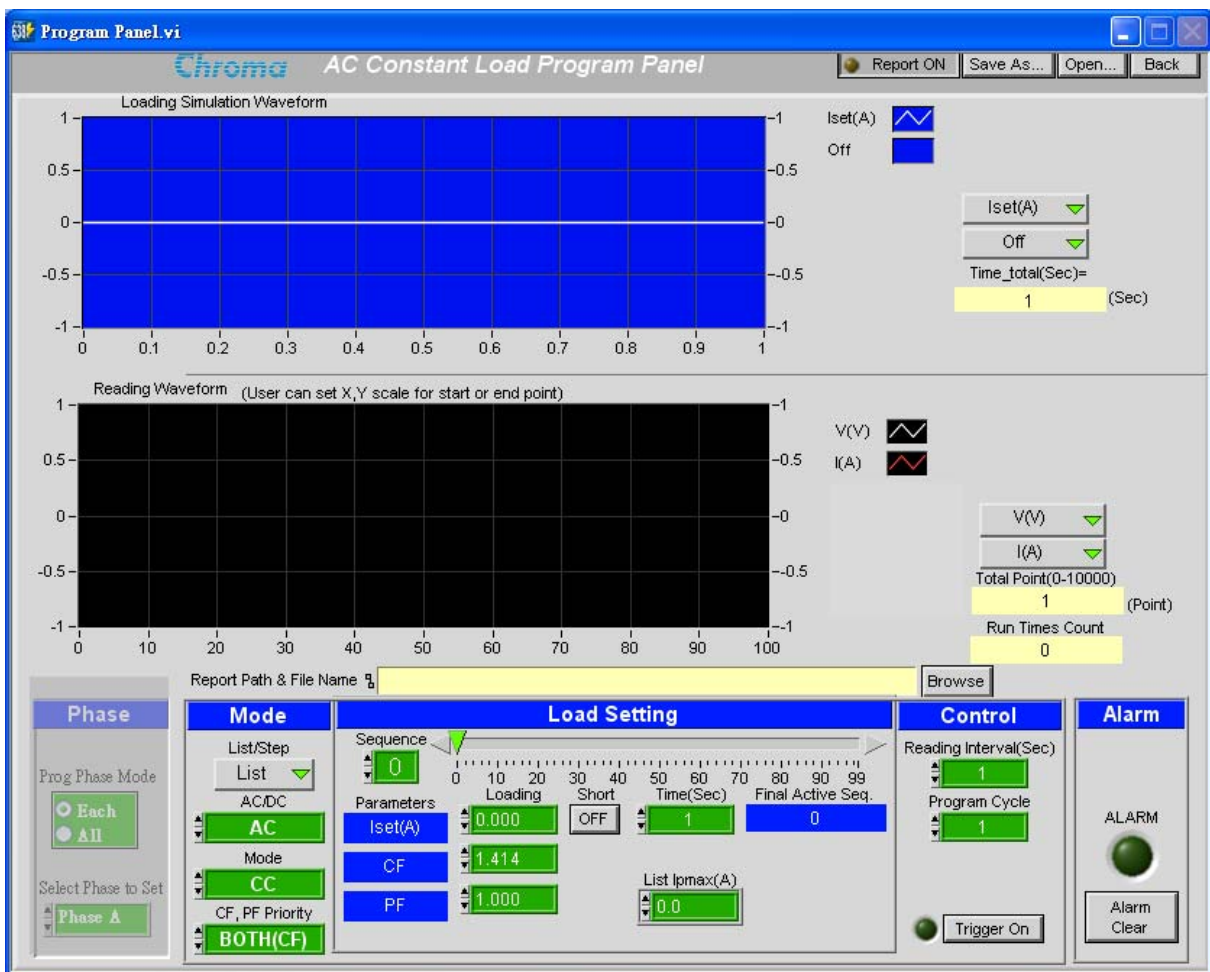


Figure 6-1 Program Panel

### 6.1 Loading Simulation Waveform

If there is any parameter of List or Step with variation, the program will simulate edited List or Step waveform. Time\_total component indicate: it indicates the current setting need to take how many time to complete execution.

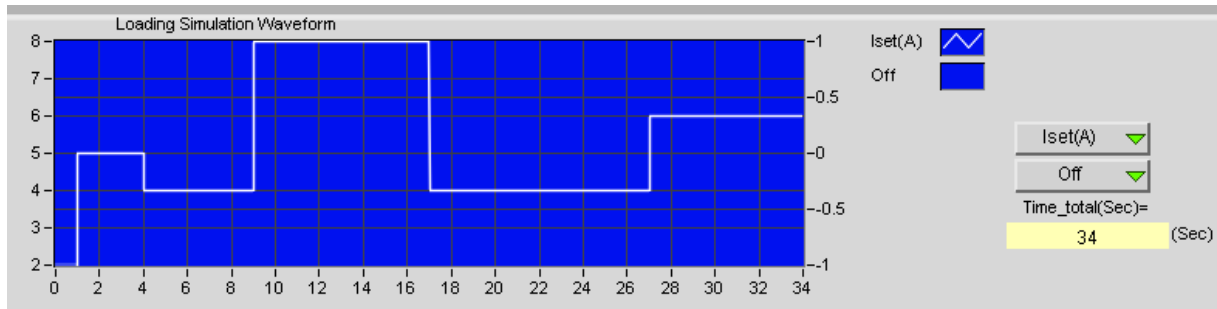


Figure 6-2 Loading Simulation Waveform

## 6.2 Parameter Setting

This area is for setting loading mode, List/Step loading parameter, repeat execution time and Trigger On/Off of electronic load.

### 6.2.1 Mode

It is for setting AC/DC, MODE (CC, CR, CP, CV, RLC, RLC CP) and CF PF Priority of electronic load. List/Step can select to execute List Mode or Step Mode.

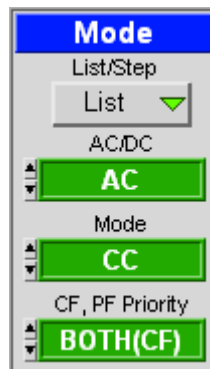


Figure 6-3 Mode Screen

### 6.2.2 Load Setting

It is for setting loading parameter of electronic load, *i.e.* Iset, CF, PF and Ip(max) parameters will be occurred for setting while it is AC CC. According to List/Step selection, the screen divides into List Mode and Step Mode.

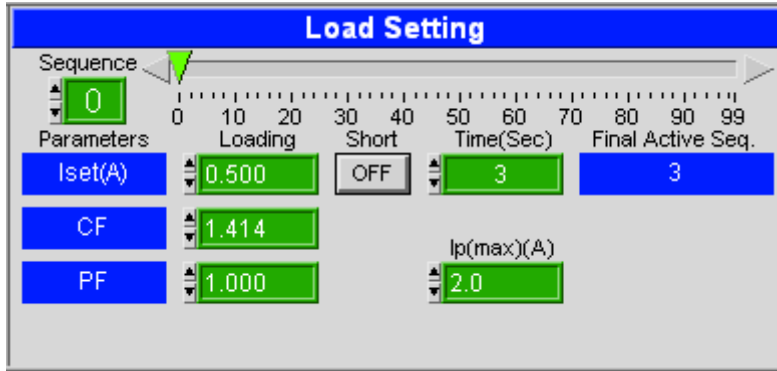


Figure 6-4 List Mode Parameter Setting Screen

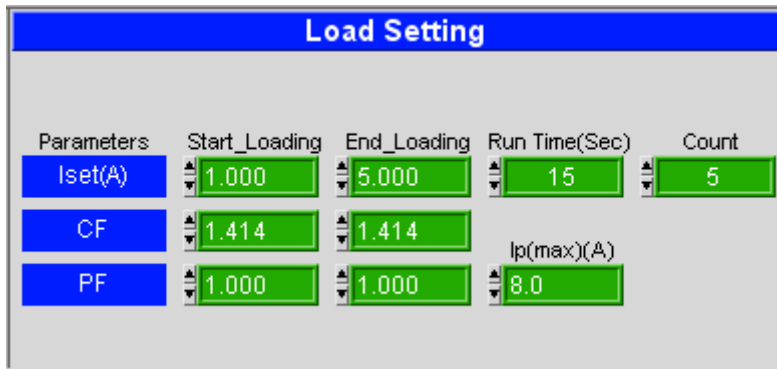


Figure 6-5 Step Mode Parameter Setting Screen

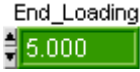

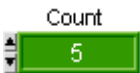
Detail descriptions:

1. List mode parameter:

- a. : It sets sequence number, range is 0 ~ 99, 100 sequences can be programmed in total.
- b. : It sets Loading value of the sequence.
- c. : It sets if the sequence executes Short.
- d. : It sets duration of the sequence. If it set to 0 then stop sequence execution.
- e. : It indicates the final sequence.

2. Step mode parameter:

- a. : Step start Loading value

- b.  : Step end Loading value
- c.  : Step run time
- d.  : It sets level count of step method.

### 6.2.3 Control

Reading Interval can set interval time of each read back measurement value then show it on Reading Waveform. After List Mode or Step Mode parameter setting completed then can set Program Cycle to inform the software needs to execute how many time of List Mode or Step Mode. Run Times Count displays the component currently repeated execution to how many times. When the setting condition is completed, only click **Trigger On** to execute. If users want to stop execution during run time, just press **Trigger Off**.

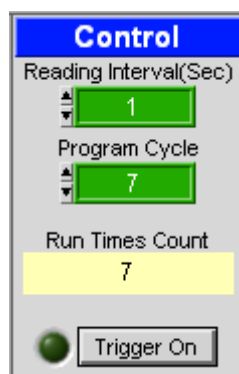


Figure 6-6 Control Screen

### 6.3 Reading Waveform

The measurement value read back each time will display on Reading Waveform. Users can select to display which measurement value and input the desired interval to start and end point of X axis for monitoring a certain period of time.

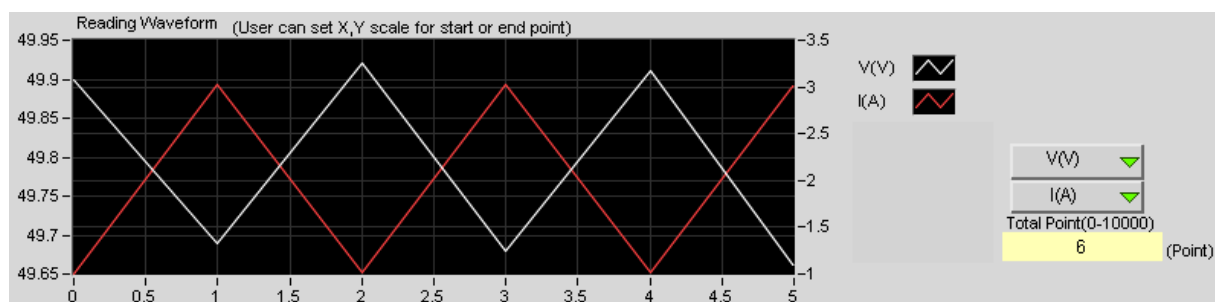


Figure 6-7 Reading Waveform

## 6.4 Report

**Report ON** button can control if report generated. When it is set as Report ON, click **Trigger On** button to start record data and click **Trigger Off** button to stop record data. Click **Browse** to select directory and file name for saving record. The report data sampling time is determined by Reading Interval (Sec), the report is a pure text file in \*.txt.



Figure 6-8 Report Setting Button

## 6.5 Three-phase Program

Click **Program** on Main Panel to enter the panel under three-phase condition as *Figure 6-9* shown.

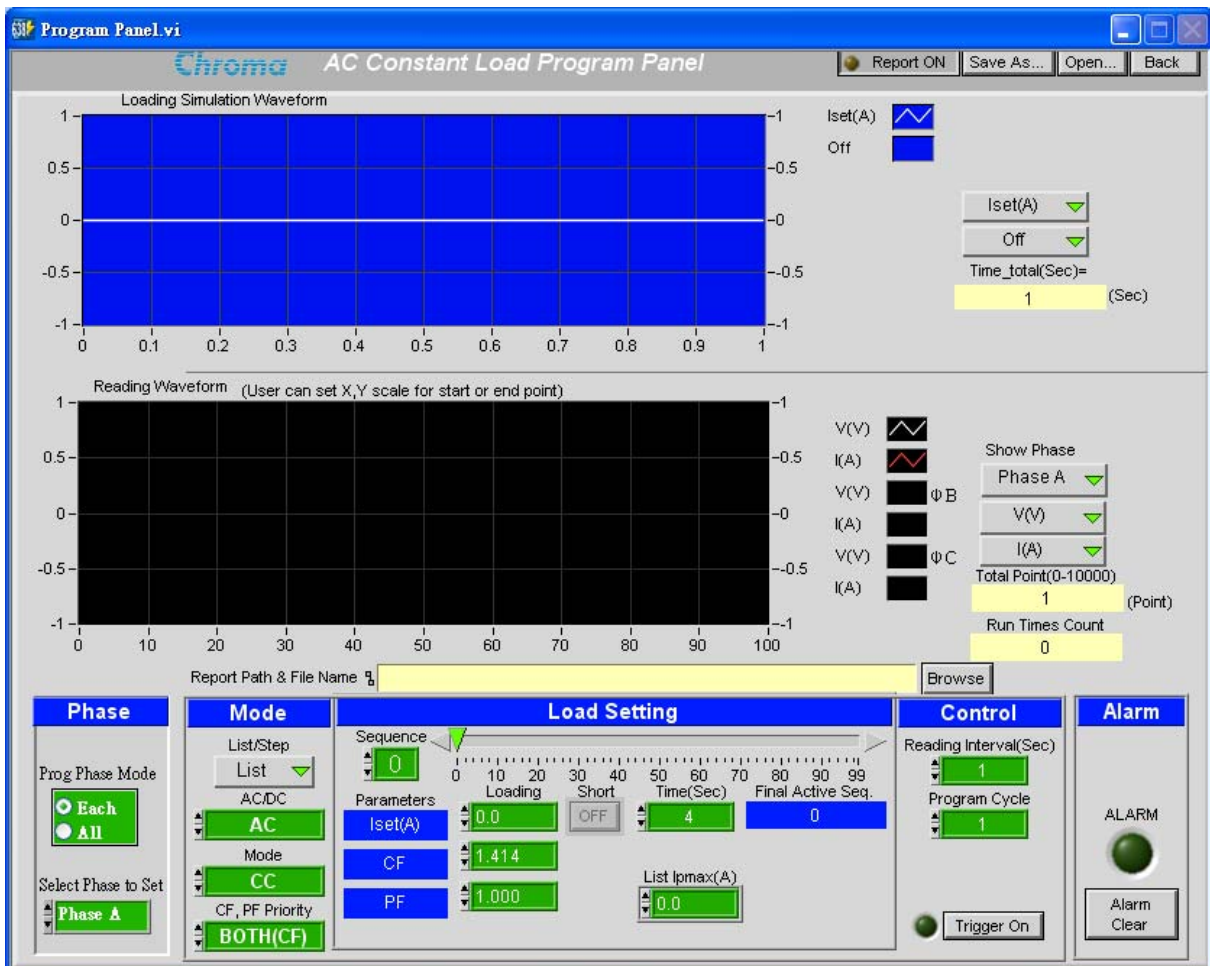


Figure 6-9 Three-phase Program Page

1. Set phase parameter:

Select "All" in "Prog Phase Mode" field thus "Select Phase to Set" field will be set to "Phase All" automatically as *Figure 6-10* shown. Set the same parameter for three phases at a time.

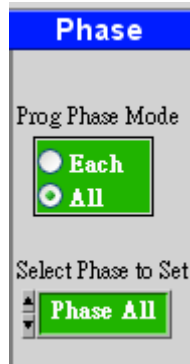


Figure 6-10 Three-phase Field Set as All

If "Each" is selected in "Prog Phase Mode" field thus "Select Phase to Set" field can select "Phase A", "Phase B", "Phase C" individually for setting parameters of each phase.

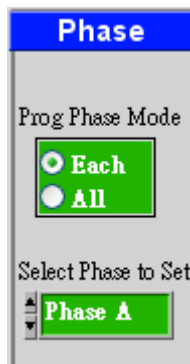


Figure 6-11 Three-phase Field Set as Each

2. Display phase reading

Users can select phase reading to be displayed in "Show Phase" field as *Figure 6-12*.

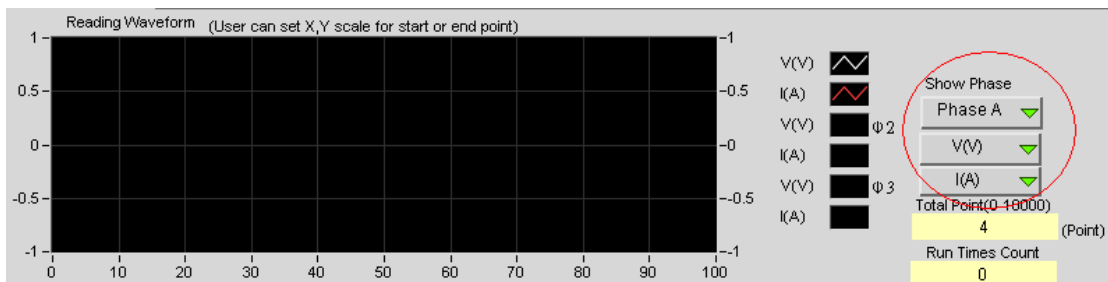


Figure 6-12 Three-phase Condition Reading Waveform

When "Phase All" is selected, the readings of three phases can be shown at a time as *Figure 6-13*.

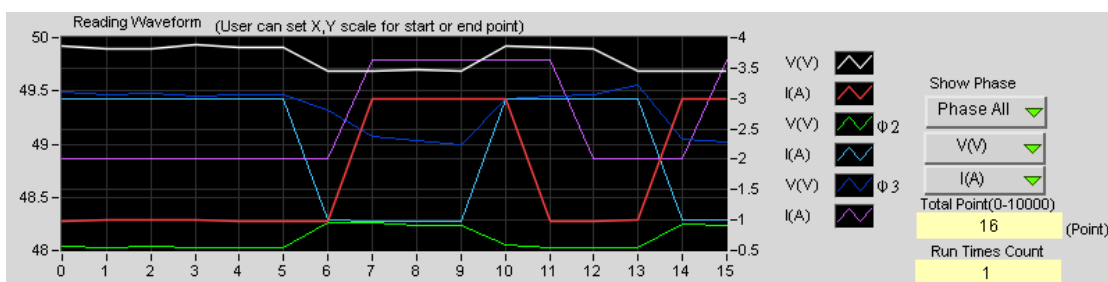


Figure 6-13

When Phase A , Phase B or Phase C is selected thus each phase reading will be shown separately as *Figure 6-14* shown.

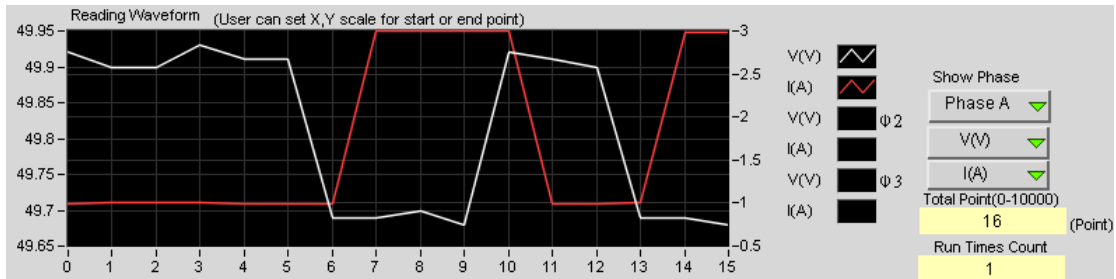
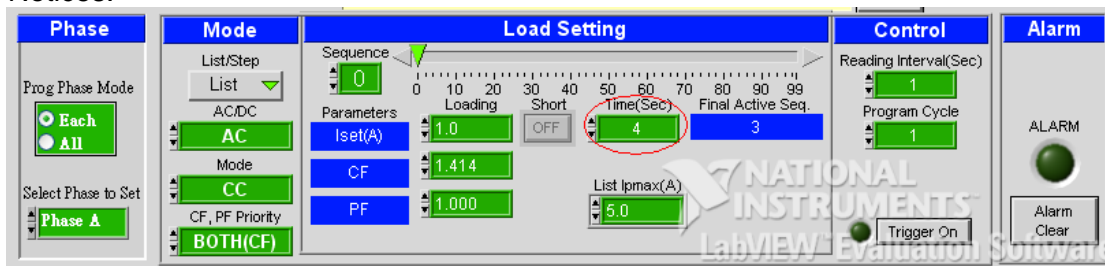


Figure 6-14

3. Notices:



Change a Sequence needs 4 seconds for loading under three-phase mode that it can be stability. Therefore, Time (Sec) field needs to set 4 seconds at least as the figure above.

Pay special attention to that each Sequence of instrument is stabilizing in the first four seconds so the reading may not compliance with the value which parameter set. After executing each sequence for 4 seconds, the reading will meet to the set parameter.





## 7. Product Information

Click **Product Info.** on Main Panel to enter the panel as *Figure 7-1* shown. This display area mainly purpose is for users' convenience to check specifications of each Model. The models in the table include 63802, 63803 and 63804. Users can click Model Name to enter related page.

Model	63802									
Power	1800W	Inrush Current	$I_{p(max)}$ , $R_s$ , $L_s$ , $C$ , $R_l$ , Phase	Resolution	0.01V					
Current	0 ~ 18Arms (54Ap)	Mode	80A (peak current)	<b>Measurement Section</b>						
Voltage	50 ~ 350Vrms (500Vp)	$R_s$ Range	0 ~ 9.999ohm	DVM Range	500.0V					
Frequency	45 ~ 440Hz, DC	$L_s$ Range	0 ~ 9999uH	DVM Accuracy	0.1% + 0.1%F.S.					
<b>AC Section</b>		C Range	100 ~ 9999uF	DVM Resolution	10mV					
<b>CC Mode</b>		$R_l$ Range	2.77 ~ 9999.99ohm	DAM Range	80.00A					
Range	0 ~ 18Arms	<b>DC Section</b>		DAM Acc. (<70Hz)	0.1% + 0.2%F.S.					
Accuracy*1	0.1% + 0.2%F.S.	Voltage Range	7.5 ~ 500V	DAM Acc. (>70Hz)	0.1% + 0.2%F.S.					
Resolution	2mA	Current Range	0 ~ 18A	*1						
<b>CR Mode</b>		Slew Rate	4 ~ 240A/ms	DAM Resolution	1.0mA					
Range	2.77 ~ 2.5Kohm	Rise Time	75us	Others	P(W), S(VA), Q(VAR), CF, PF, Freq, R, $I_{p-}$ , $I_{p+}$ , THDv					
Accuracy	0.5% + 0.5%F.S.	Min. Voperating	7.5V	<b>Others</b>						
Resolution	20u mho	Operating Mode	CC/CV/CR/CP/DC RECT	Vmonitor	+500V/+10V (Isolated)					
<b>CP Mode</b>		Short Circuit Simulation	Use the CR mode loading under max. power rating	Imonitor	+80A/+10V (Isolated)					
Range	1800W	<b>CC Mode</b>		Protection	OCP: 19.2Arms; OVP: 360Vrms (DC: 510V); OPP: 1920W, OTP					
Accuracy	0.2% + 0.3%F.S.	Range	0 ~ 18A	Parallel Ability	Yes					
Resolution	0.375W	Accuracy*1	0.1% + 0.2%F.S.	Remote Interface	GPIO, RS-232 or analog					
<b>CF (CC, CP)</b>		Resolution	2mA	<b>AC Input</b>						
Range*2	1.414 ~ 5.0	Range	2.22 ~ 1Kohm	Line Voltage	115/230 Vac					
Accuracy	(0.5%/Irms) + 1%F.S.	Accuracy	0.5% set + 0.5%F.S.	Amplitude	+/-15%					
Resolution	0.005	Resolution	20u mho	Fuse	2A, 250V					
<b>PF</b>		<b>CP Mode</b>		Frequency	47 ~ 63Hz					
Range	0 ~ 1 lead or lag	Range	1800W	Maximum VA	150VA					
Accuracy	1%F.S.	Accuracy	0.2% + 0.3%F.S.	<b>General</b>						
Resolution	0.001	Resolution	0.375W	Dimension (mm)	177(H)x430(W)x585(D)					
<b>Rectified Load Mode</b>		<b>CV Mode</b>		Weight	34kg / 74.89lbs					
Operating Frequency	45 ~ 70Hz	Range	7.5 ~ 500V							
RLC Mode	$I_{p(max)}$ , $R_s$ , $L_s$ , $C$ , $R_l$	Accuracy	0.3% + 0.3%F.S.							
CP Mode	$I_{p(max)}$ , 200 ~ 1800W PF=0.4 to 0.75									

Figure 7-1 Product Information Screen





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