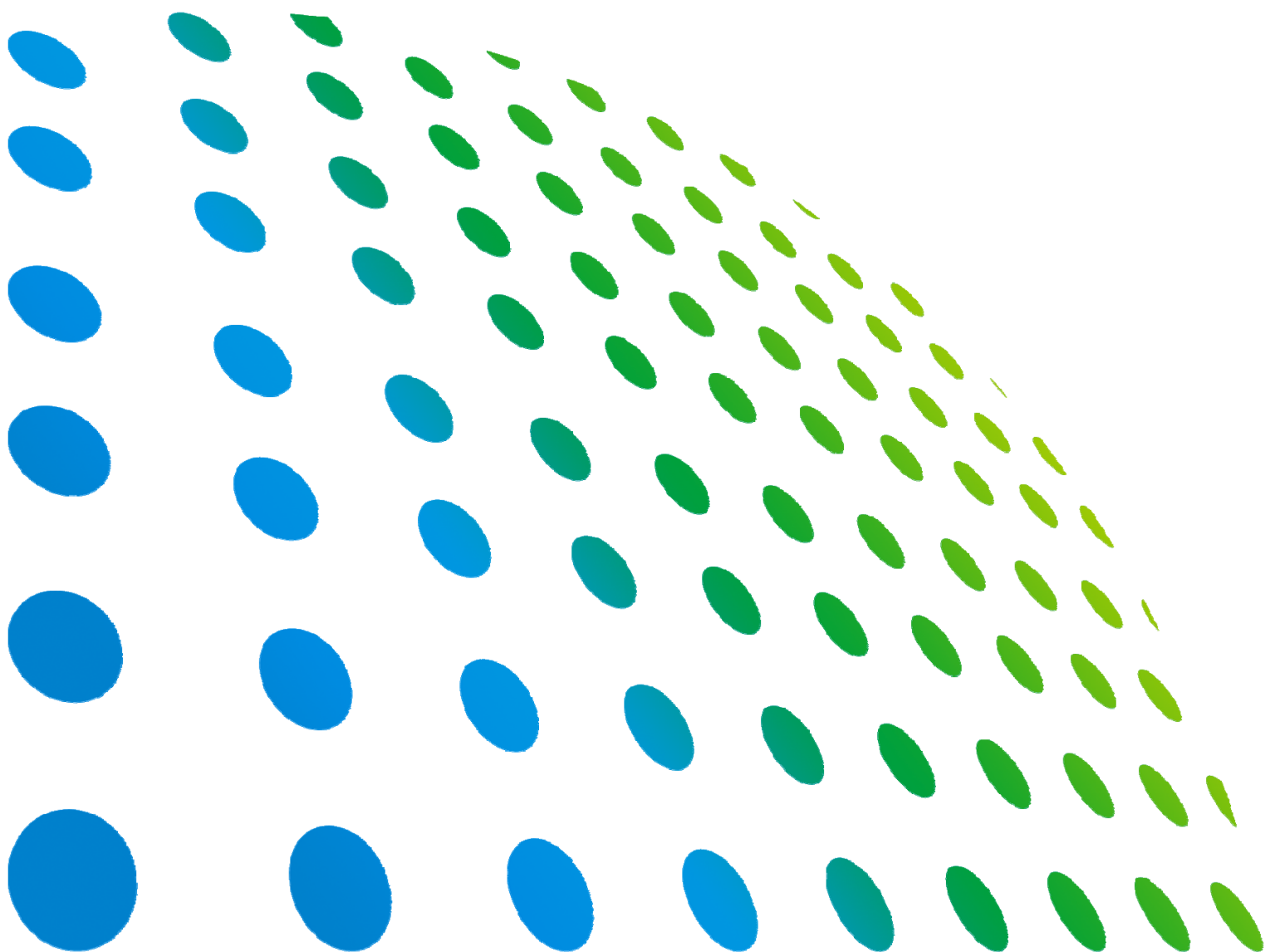




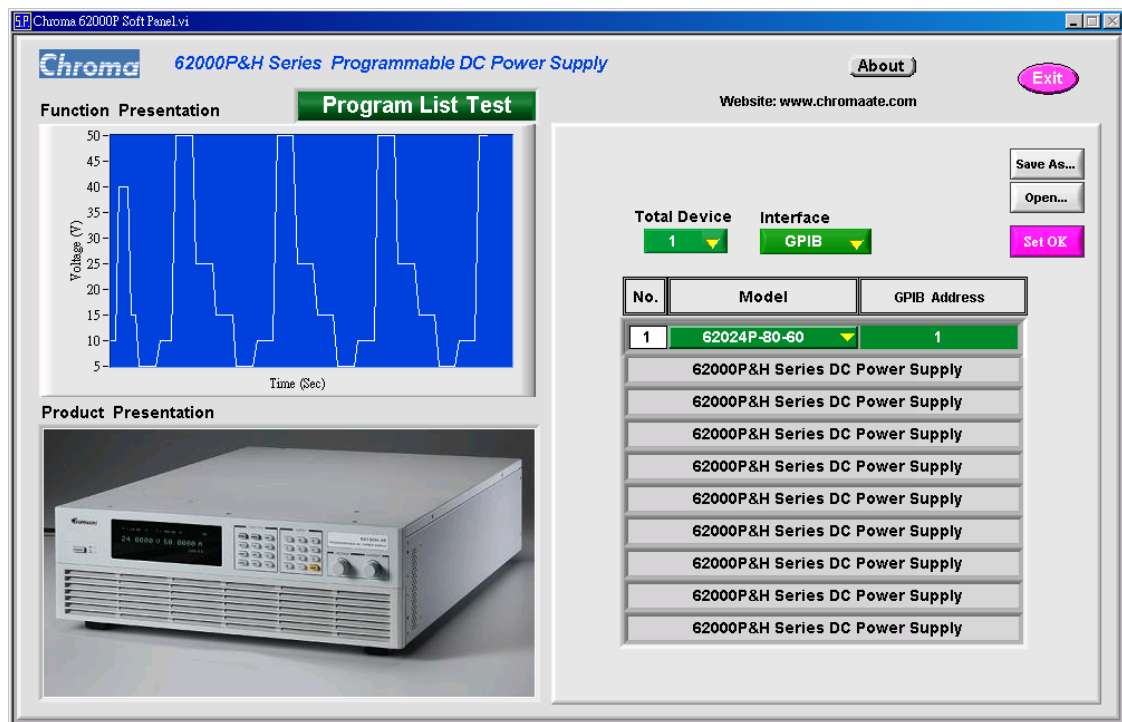
Programmable DC Power Supply

62000P&H Series

Soft Panel User's Manual



Programmable DC Power Supply 62000P&H Series Soft Panel User's Manual



Version 1.5
September 2012

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CHROMA ATE INC.

66 Hwa-Ya 1st Rd., Hwa-Ya Technical Park, Kuei-Shan Hsiang, Taoyuan Hsien, Taiwan

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CHROMA ATE INC.

66 Hwa-Ya 1st Rd., Hwa-Ya Technical Park,
Kuei-Shan 33383, Taoyuan County, Taiwan
Tel: 886-3-327-9999
Fax: 886-3-327-2886
e-mail: chroma@chroma.com.tw

<http://www.chromaate.com>

Revision History

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

Date	Version	Revised Sections
Nov. 2006	1.0	Complete this manual.
Apr. 2007	1.1	Update the entire manual for function and screen changes.
Jan. 2008	1.2	Update the manual to add the functions of USB support and road vehicles test regulations.
Oct. 2008	1.3	Update the following chapters and sections: – “Supported Hardware” and “Software & Hardware Requirements” in the chapter of “System Structure” to add new hardware and supported software. – The figure of Program Panel in the chapter of “Program Panel & Button Description.” – Replace the chapter title of “ISO 16750-2” with “ISO 16750-2 Test Panel & Button Description” and modify the contents. Add the following section: – “Battery Voltage Dropout” in the chapter of “ISO 16750-2 Test & Button Description.”
Aug. 2010	1.4	Add 62024P-40-120, 62024P-600-8 two supported models and Ethernet communication interface. Update the <i>Program Panel</i> .
Sep. 2012	1.5	Update the Soft Panel to support 62000H Series Programmable DC Power Supplies Update the software installation procedure

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1. System Structure

This chapter explains the structure and functions of Chroma DC Power Supply 62000P&H Series Soft Panel application.

1.1 Introduction

The Soft Panel is friendly graphic user interface that is specially designed to control the device to assist users in resolving the inconvenience while operating the instrument panel. It supports the 62000P&H Series DC Power Supplies Chroma produced and allows users to select GPIB, RS232 or USB as the communication interface to connect with the master computer. It is able to support up to 5 sets of DC Power Supplies in serial or parallel and control the Vin Ramp as well as Program Run, etc.

1.2 Supported Hardware

It supports Chroma 62006P-30-80, 62006P-100-25, 62006P-300-8, 62012P-40-120, 62012P-80-60, 62012P-100-50, 62012P-600-8, 62024-80-60, 62024P100-50, 62024P-40-120, 62024P-600-8, 62050P-100-100, 62150H-40, 62100H-40, 62050H-40, 62075H-30, 62100H-30, 62150H-450, 62100H-450, 62050H-450, 62150H-600, 62100H-600, 2050H-600, 62150H-600S, 62100H-600S, 62050H-600S and 62150H-1000S Programmable DC Power Supplies.

1.3 Communication Interface

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

- a. GPIB
- b. RS232 serial port
- c. USB
- d. Ethernet

1.4 Software & 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 98/2000/XP, VISA RTE 3.0 or above, LabVIEW 7.0 RTE, CVI 6.0 RTE or above, IVI RTE 1.83 or above. For other OS such as Vista, please go to NI website to download the correct version of Run Time Engine that is compatible with the OS for installation and execute this program. (NI website:<http://www.ni.com>)
- 400 MB hard disk space at least with 120 MB or above available
- 256 MB memory at least

- VGA or SVGA color monitor
- PS2 mouse

1.5 Software Installation

Before using 62000P&H Soft Panel it is necessary to install NI VISA Run Time Engine, NI IVI Run Time Engine and NI CVI Run Time Engine drivers into the operating system. To use GPIB card, it is necessary to install NI 488.2 driver. The following section describes how to install the software in the Windows environment step by step. First insert the CD of 62000P&H Soft Panel system software into the CD drive.

1.6 Installing 62000P&H Soft Panel

1. Place the CD into the CD drive, Setup.exe program will execute automatically and prompt a Setup screen of program installation menu as Figure 1-1 shows. Click Setup.exe manually if it does not run automatically.

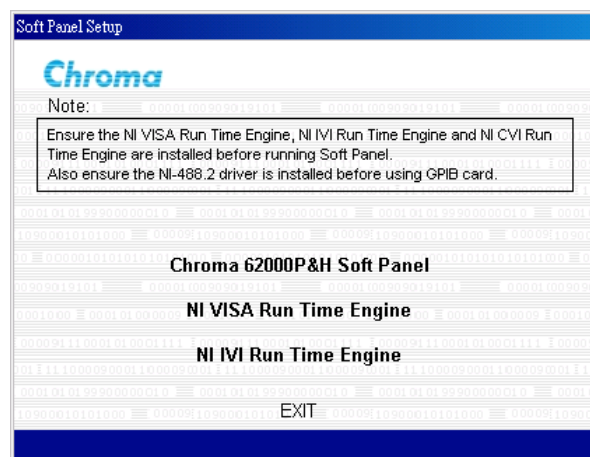
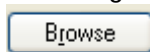


Figure 1-1 Soft Panel Program Installation Menu

2. Double-click Chroma 62000P&H Soft Panel will go to the following screen and start installing the application. The program is default installed under the path of C:\Program Files\Chroma. If it is necessary to change the installation path, click



in the dialog box and specify a new user-defined path as Figure 1-2 shows.

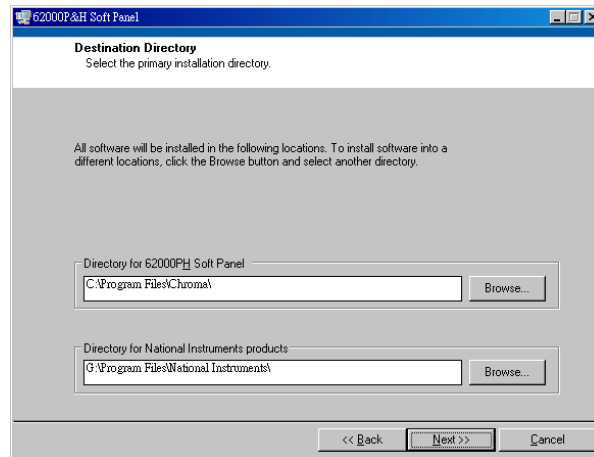


Figure 1-2 Installation Path

3. Follow the instruction and click **Next>>** to continue the installation.

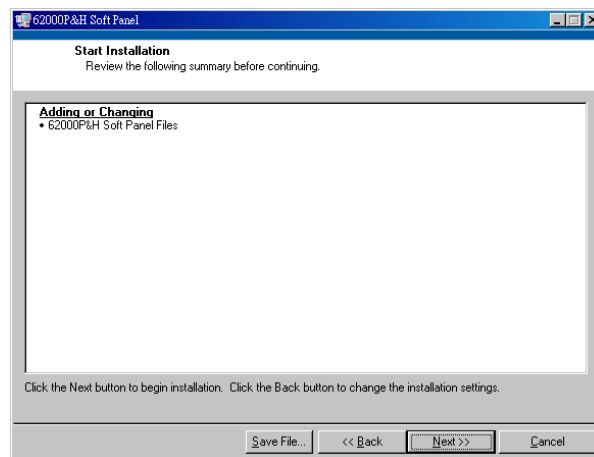


Figure 1-3 Start Installation

4. Last, a screen of installation is done successfully will appear.

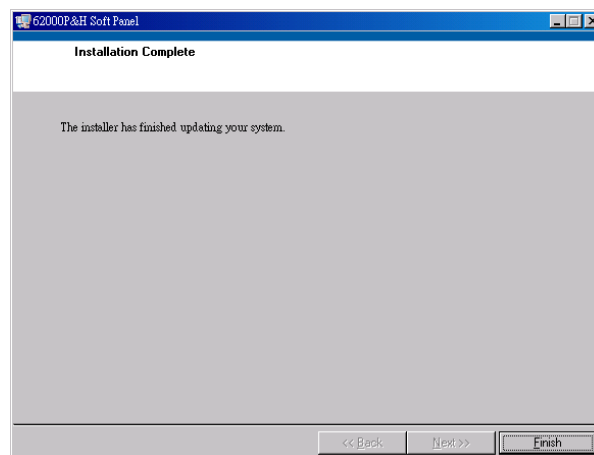


Figure 1-4 Screen of Installation Complete

1.7 Installing NI VISA Run Time Engine

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 site <http://www.ni.com/support/zht/>. Please ignore this section if NI VISA Run Time Engine driver has been installed.

1. To install the NI VISA Run Time Engine 4.1 driver, double-click the NI VISA Run Time Engine in Figure 1-1 and it enters to Figure 1-5 after initialization.

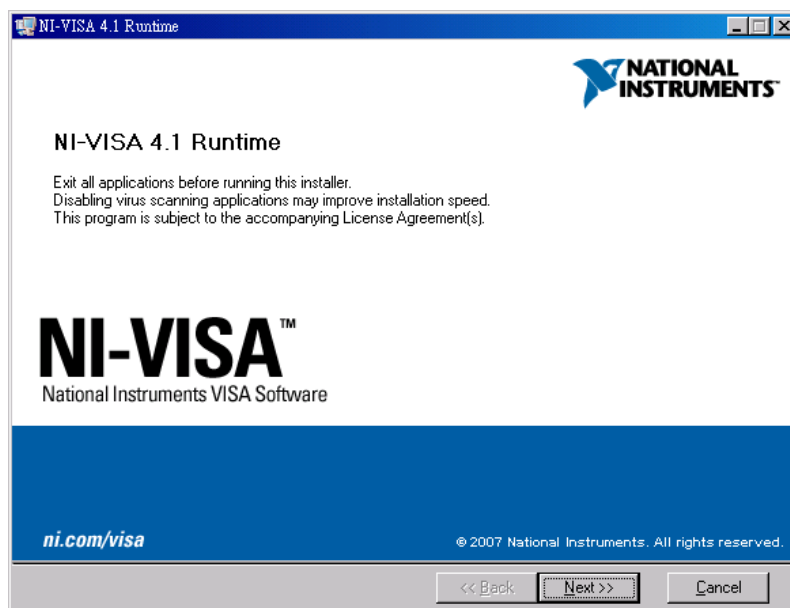


Figure 1-5 NI VISA 4.1 Run Time Engine Installation Screen

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 and ask the user for installation path as Figure 1-6 shows.

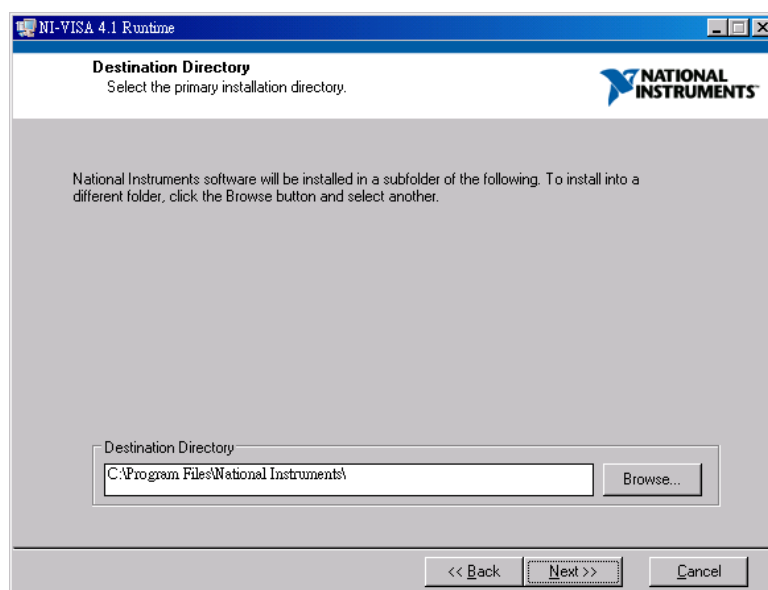


Figure 1-6 Determining the Installation Path

3. Follow the prompt message to click **Next >>** and complete the installation procedure as Figure 1-7.

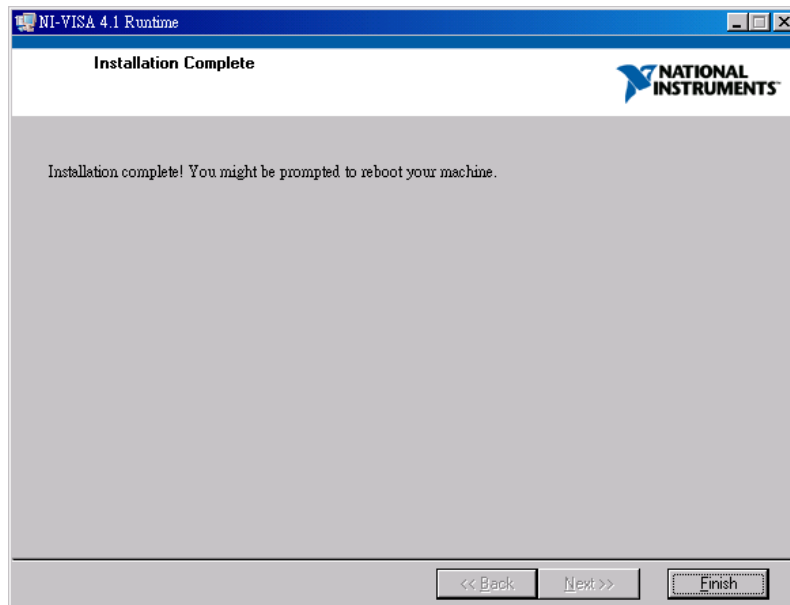


Figure 1-7 Installation Complete Screen

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

1.8 Installing NI IVI Run Time Engine

1. To install the NI IVI Run Time Engine driver, double-click the NI IVI Run Time Engine in Figure 1-1 will go to the following screen to install the interface driver.



Figure 1-8 Installing NI IVI Run Time Engine

2. It is ok to use the default path during installation.

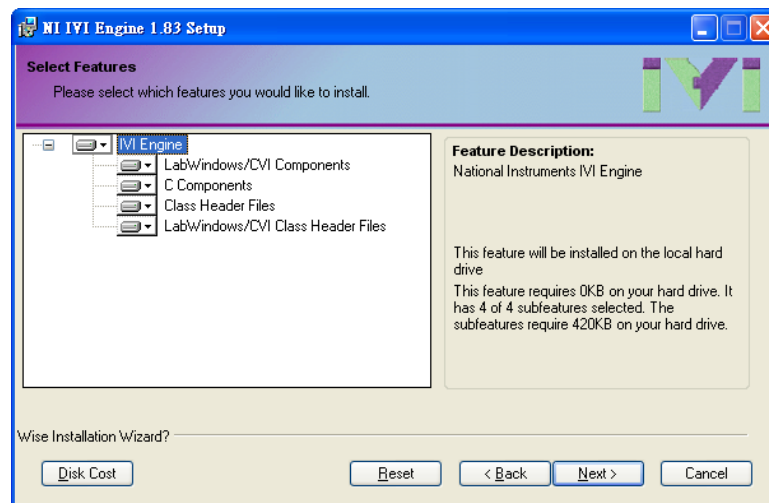


Figure 1-9 Using Default Path

3. When the installation is done, the system can be used with the settings applied without reboot.

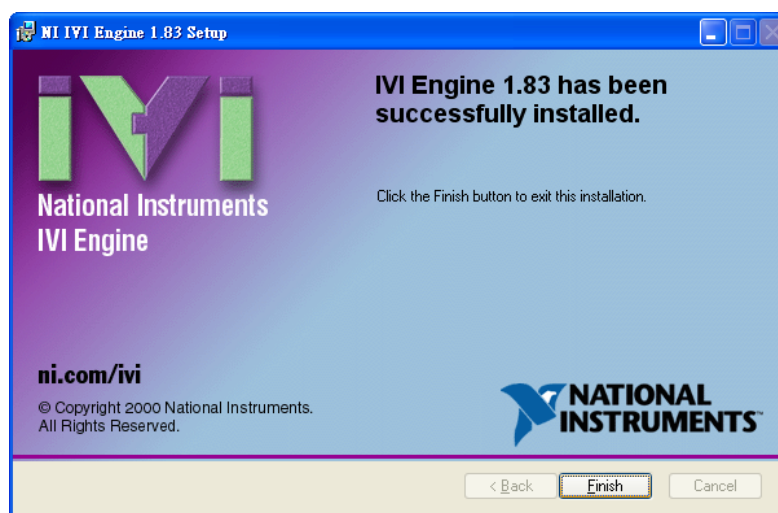


Figure 1-10 Installation Complete Screen

1.9 Executing Soft Panel

1. When all drivers are installed successfully, click **Start→Programs→ 62000P&H Soft Panel** to start Chroma 62000P&H Soft Panel application.



Figure 1-11 Starting 62000P&H Soft Panel

2. The CD shipped along with the hardware contains the files listed in Figure 1-12. The PDF files of Chinese and English version User's Manuals are placed in "Manual1" directory for user's reference.



Figure 1-12 Files in CD

1.10 Uninstalling 62000P&H Soft Panel

To remove the 62000P&H Soft Panel application, it is suggested to click **Start→Settings→Control Panel→Add/Remove Programs** to uninstall the related items.

2. Startup Screen & Button Description

2.1 Functions of Communication Interface

When the installation is done, click **Start→Programs→ 62000P&H Soft Panel** to activate the Chroma 62000P&H Soft Panel. Before connecting the Chroma 62000P&H DC Power Supply, it is necessary to set the parameter of communication interface as Figure 2-1 shows.

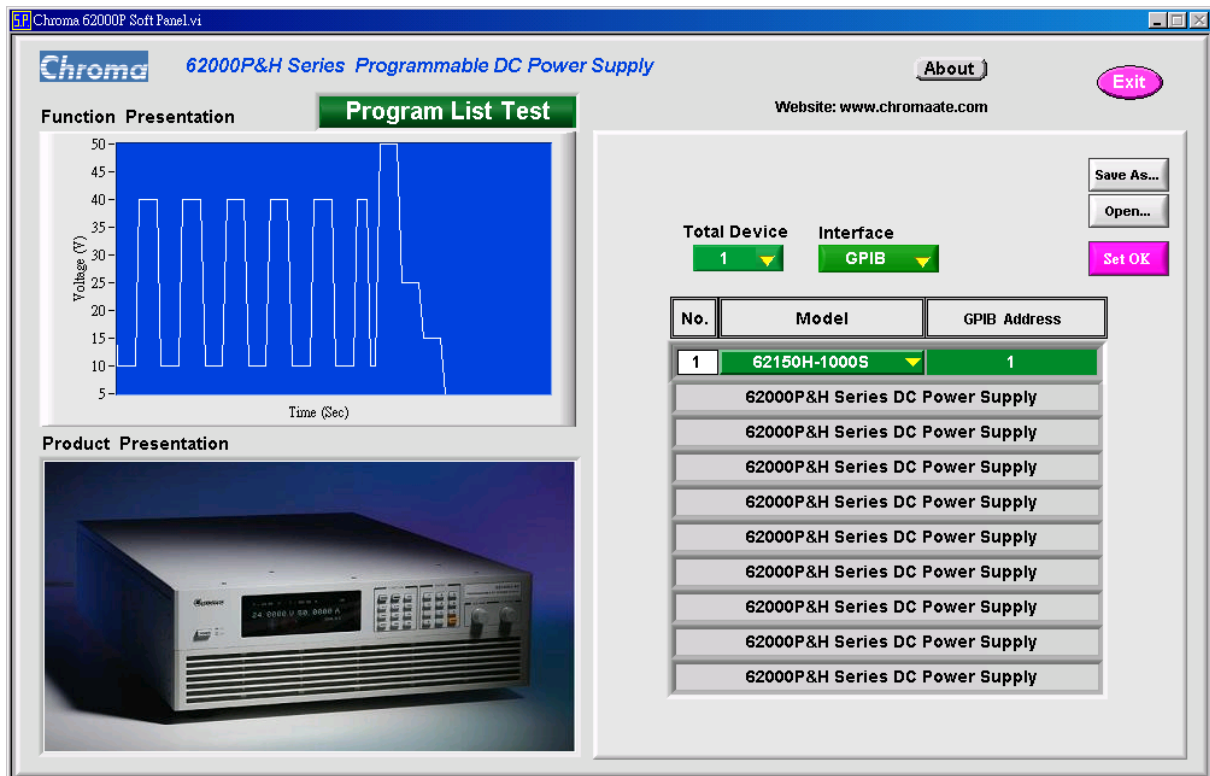


Figure 2-1 Communication Interface Window

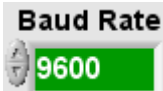
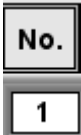
The startup screen is composed of the following 3 segments:

- Function Presentation
- Product Presentation
- Communication Setting

Description:

- Function Presentation: It follows the definition of each Function to simulate the mapping DC Power Supply output waveform.
- Product Presentation: It shows the DC Power Supply outline.
- Communication Setting: It sets the communication protocol of PC and DC Power Supply that is GPIO or RS232 or USB. When GPIO is selected for communication protocol, a GPIO card must be installed on the PC site.

2.2 Buttons Description

1.  : It specifies the total devices for control. The range is 1 to 10 sets
2.  : It specifies the communication interface RS232 or GPIB or USB to be connected.
3.  : It can be specified when RS232 is selected. It supports 9600, 19200, 38400, 57600 and 115200 at present.
4.  : It shows the sequential number of device.
5.  : It specifies the controlled device model number.
6.  : Follow the communication interface type to specify the GPIB position or RS232 COM Port.
7.  : It saves the present settings as a parameter setting file (*.cms) and the  button can open it.
8.  : It ensures the communication parameter is set without error. Click it to connect with hardware device and go to Hardware Configuration Panel.
9.  : It ends the program and prompt warning message if any for confirmation.
10.  : It links to the Chroma's web site for related information.
11.  : It shows the software version no.

3. Hardware Configuration Panel & Button Description

3.1 Function of Hardware Configuration Panel

The Hardware Configuration Panel allows users to do the master/slave type serial or parallel output settings for controlled DC Power Supplies. It supports maximum 5 sets of DC Power Supplies for serial or parallel connection, for instance 1 Master and 4 Slaves for parallel connection. However, either serial or parallel connection it has to be in same model number as Figure 3-1 shows.

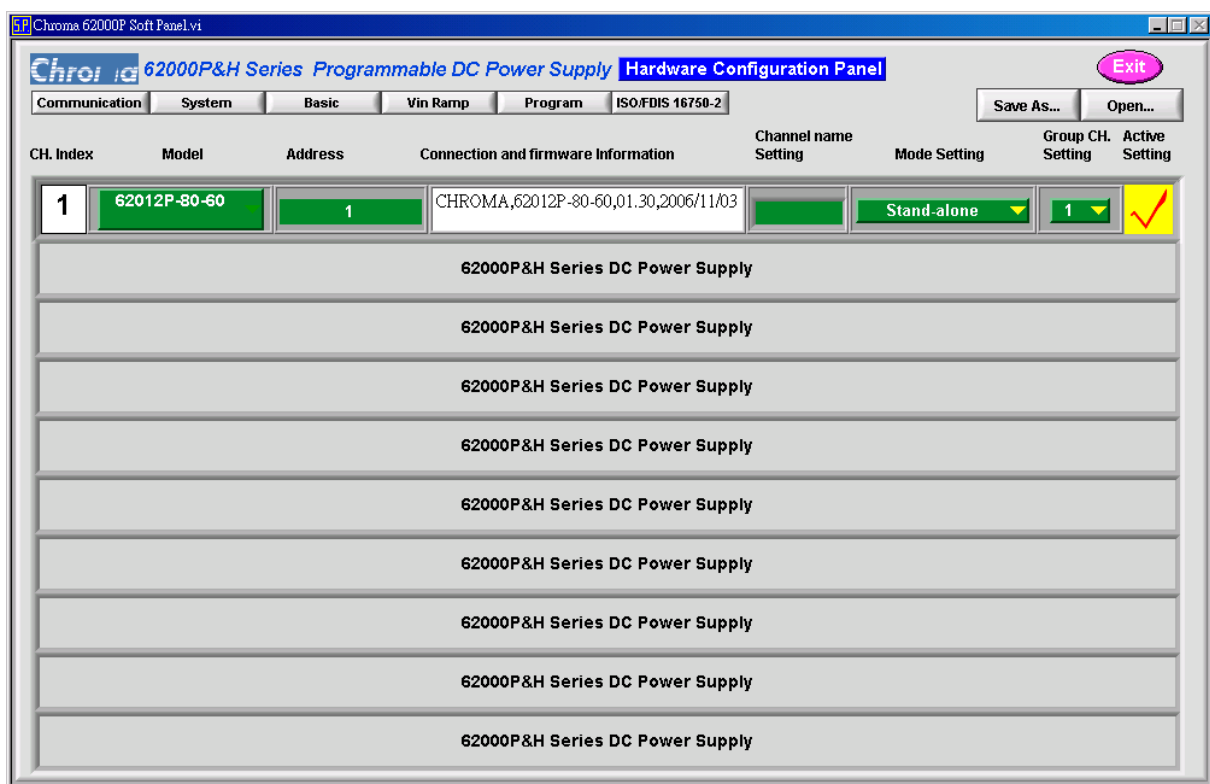


Figure 3-1 Hardware Configuration Panel

3.2 Button Description

1. **Communication**: It returns to communication interface window and reset all devices.
2. **System**: It goes to for setting output protection mode and high/low limit parameters for stand-alone unit.
3. **Basic**: It goes to the window for setting basic voltage, current output and measurement for stand-alone unit.

4. : It goes to the window for controlling voltage slew rate output. (Note 1)
5. : It goes to the window for programming editable output waveform. (Note 1)
6. : It goes to the window for programming editable road vehicles test regulations. (Note 1)

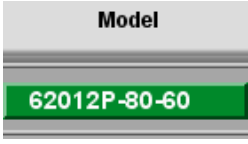
Note 1 : The instrument will detect if the functions of Vin Ramp, Program and automobile regulation test are supported automatically. The button will be disabled automatically or enabled normally.

7.  : It saves the present settings as a parameter setting file (*.cms) and the  button can open it.

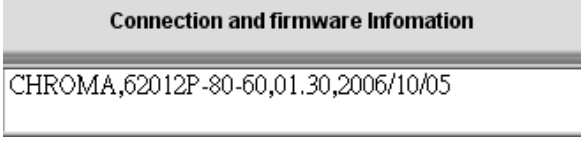
8. : It ends the program and prompt warning message if any for confirmation.

Column description of parameter settings:

1. : It shows the sequential number of devices. This column is read only.

2. : It shows the device model selected by communication interface. This column is read only.

3. : It shows the communication address selected by communication interface. This column is read only.

4. : It shows the returned firmware version information of stand-alone unit. If errors occurred during connection, a message **Connection Error!!** will prompt. This column is read only.

5. : It sets the channel name as the main channel for serial/parallel setting (for example the main channel of Master or Stand-alone unit. The channel name of Master

and Slave must be the same.



6. : It sets the device status for serial/parallel connection. There are Stand-alone, Parallel Master, Series Master, Slave 1, Slave 2, Slave 3 and Slave 4 total 7 types of parameters.



7. : It sets the group channel. The number can be repeated and maximum number can be specified is the total devices under controlled. For instance, specify the Master CH.Index 1 and salve CH.Index 2, 3, 4, 5 in the same Channel name 'Test' as the 1st Group Channel.

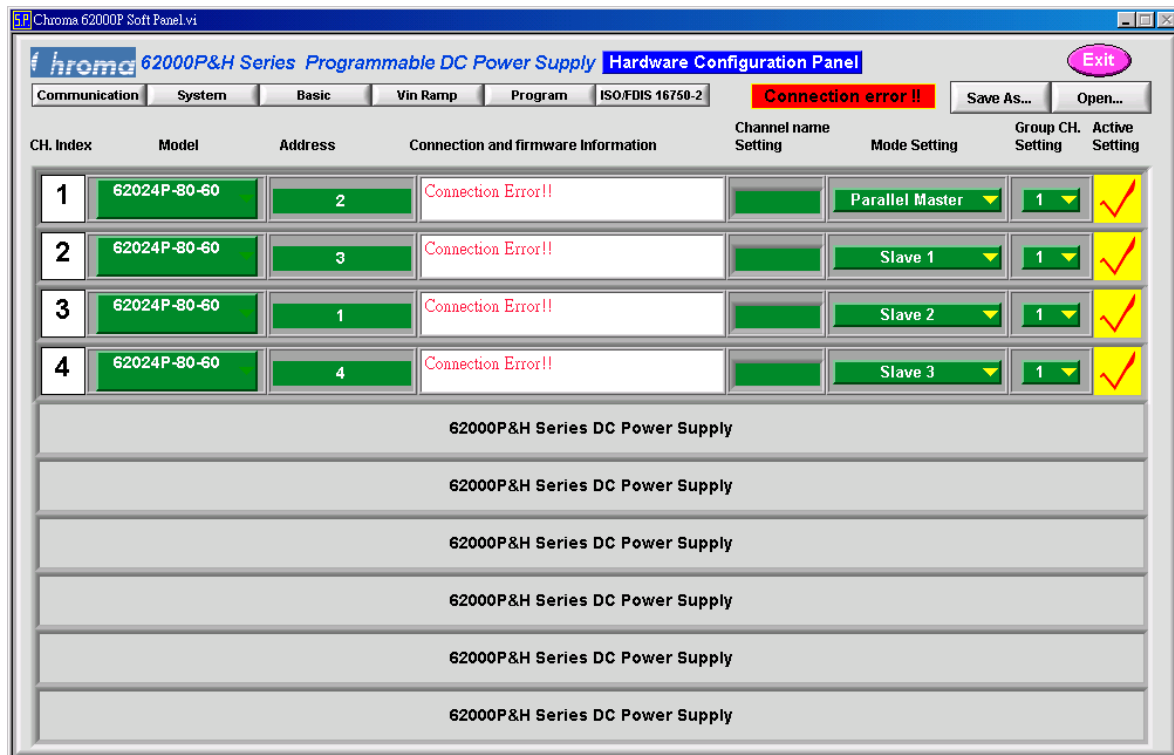


Figure 3-2 1st Group Channel



8. : It sets the enabling status of the channel. Checked with “✓” indicates the channel is enabled and is receiving commands from the master computer.

4. System Configuration Panel & Button Description

The System Configuration Panel allows users to do the level and maximum/minimum output setting of voltage, current, and power for DC Power Supply protection as Figure 4-1 shows.

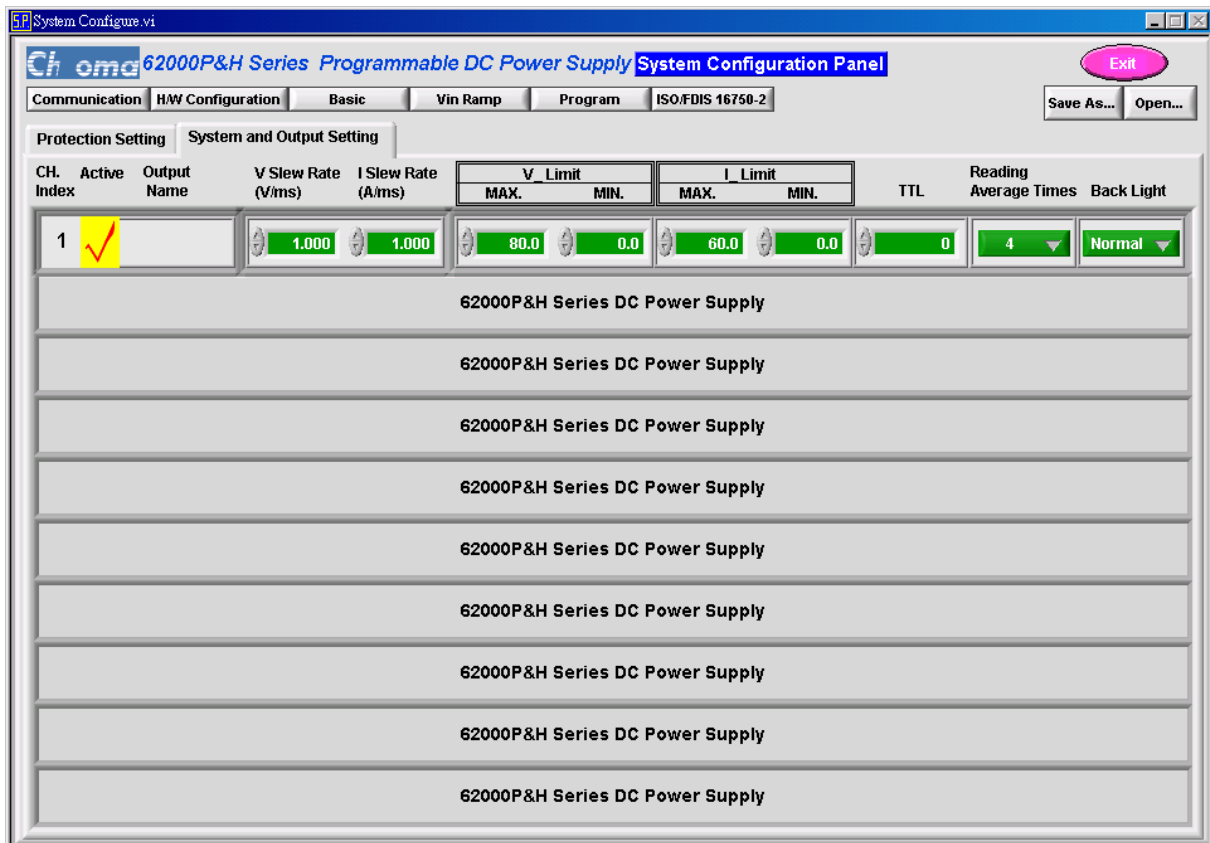


Figure 4-1 System Configuration Panel

4.1 Function of System Configuration Panel

The System Configuration Panel provides various function settings for DC Power Supply. It includes the following:

1. Protection Setting: It sets the parameters for various protection trigger levels.
2. System and Output Setting: It sets the limit of various output levels to prevent the connected output devices from damage.

4.2 Button Description

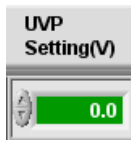
The function keys on the first and second rows are same as the one in Hardware Configuration Panel. For details please see the description of them in that section.

1. **HW Configuration**: It can re-enter into the serial/parallel setting screen to renew the configuration. The updated configuration will apply to other function panels simultaneously.
2. The settings of protection and output limits are divided into two tab pages. Click Protection Setting or System and Output Setting as Figure 4-2 shows:

Figure 4-2 Setting for Protection and Output Limits

Here introduces the parameters of each Protection Setting:

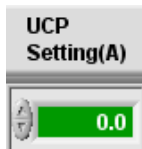
1. **CH. Index**: It shows the channel index after serial/parallel connected is done. This is read only.
2. **Active**: It sets the enabling status of the channel. Checked with "✓" indicates the channel is enabled and is receiving commands from the master computer.
3. **Output Name**: It is the channel name that indicates the main channel after setting the serial/parallel connection. This is read only.
4. **OVP Setting(V)**: It sets the voltage reference level of Over Voltage Protection (OVP) for output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection.



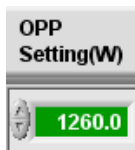
5. : It sets the voltage reference level of Under Voltage Protection for output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection. However, the value will be less than or equal to the OVP settings.



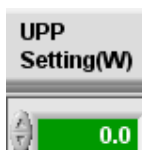
6. : It sets the voltage reference level of Over Current Protection for output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection.



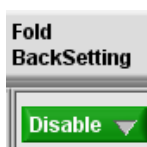
7. : It sets the voltage reference level of Under Current Protection for output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection. However, the value will be less than or equal to OCP settings.



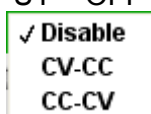
8. : It sets the reference level of Over Power Protection. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection.



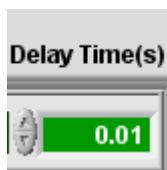
9. : It sets the reference level of Under Power Protection. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection. However, the value will be less than or equal to OPP settings.



10. : It enables users to turn off the output when switching output mode (CV to CC or CC to CV), that is OUTPUT = OFF to protect the UUT (Unit Under Test). There are



three options in the menu



11. It sets the time delayed when transient to protection. If the occurrence of transient is detected when FOLDBACK is set to CV TO CC or CC TO CV and DEALY TIME is set to t seconds, it will sustain for t seconds to activate the FOLDBACK protection as Figure 4-3 shows. The FOLDBACK protection will not activate and will return to its original state if the transient time is less than t seconds.

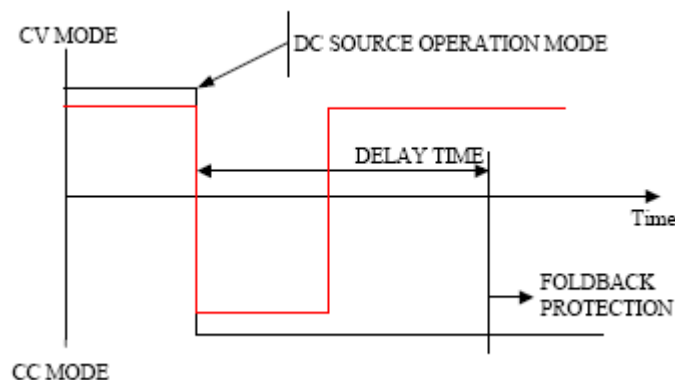
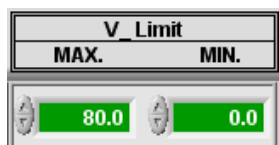


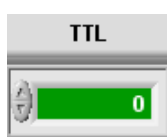
Figure 4-3 Time Delayed for Activating Protection



12. Take the example of Model 62012P-80-60, the output voltage range is 0~80V; however, it can be lowered by setting the MIN and MAX value in this option. When setting the output voltage, the DC Power Supply allows setting the voltage within the range of [MIN value $\leq$ User Defined value $\leq$ MAX value] only. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection. Also the value of MIN should be less than or equal to MAX.



13. Take the example of Model 62012P-80-60, the output current range is 0~60A; however, it can be lowered by setting the MIN and MAX value in this option. When setting the output current, the DC Power Supply allows setting the current within the range of [MIN value $\leq$ User Defined value $\leq$ MAX value] only. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection. Also the value of MIN should be less than or equal to MAX.



14. Where there is output on DC power supply, the SYSTEM STATUS connector on the device rear panel provides 8 BIT digital signal other applications. The setting range of TTL VALUE is 0 ~ 255. The system will convert it to binary so that it can

map to the pin number of SYSTEM STATUS on the rear panel. The TTL0~TTL7 are located at PIN12 ~PIN19 and PIN20 is the signal reference point (GND) of PIN8~PIN19. For other detail information, please see the manual of the stand-alone instrument. (62000H Series does not support this function.)

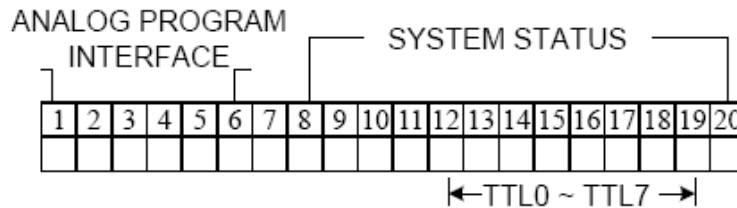
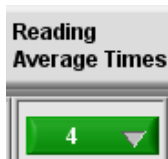
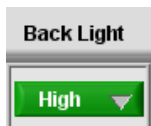


Figure 4-4 Mapped SYSTEM STATUS Pin Number on the Rear Panel



15. : It sets the average times for the displayed voltage and current readings of stand-alone unit. The more times it selects, the slower speed the voltage and current updates. The default is 1.



16. : There are four options for BACKLIGHT setting: **HIGH / NORMAL / DIMMED / OFF**. When OFF is selected the lamp on the LCD backlight panel will be turned off. The dimmer the light is the longer life the panel will be.



17. : It saves the present settings as a parameter setting file (*.cms) and the **Open...** button can open it.



18. : It ends the program and prompt warning message if any for confirmation.

5. Basic Panel & Button Description

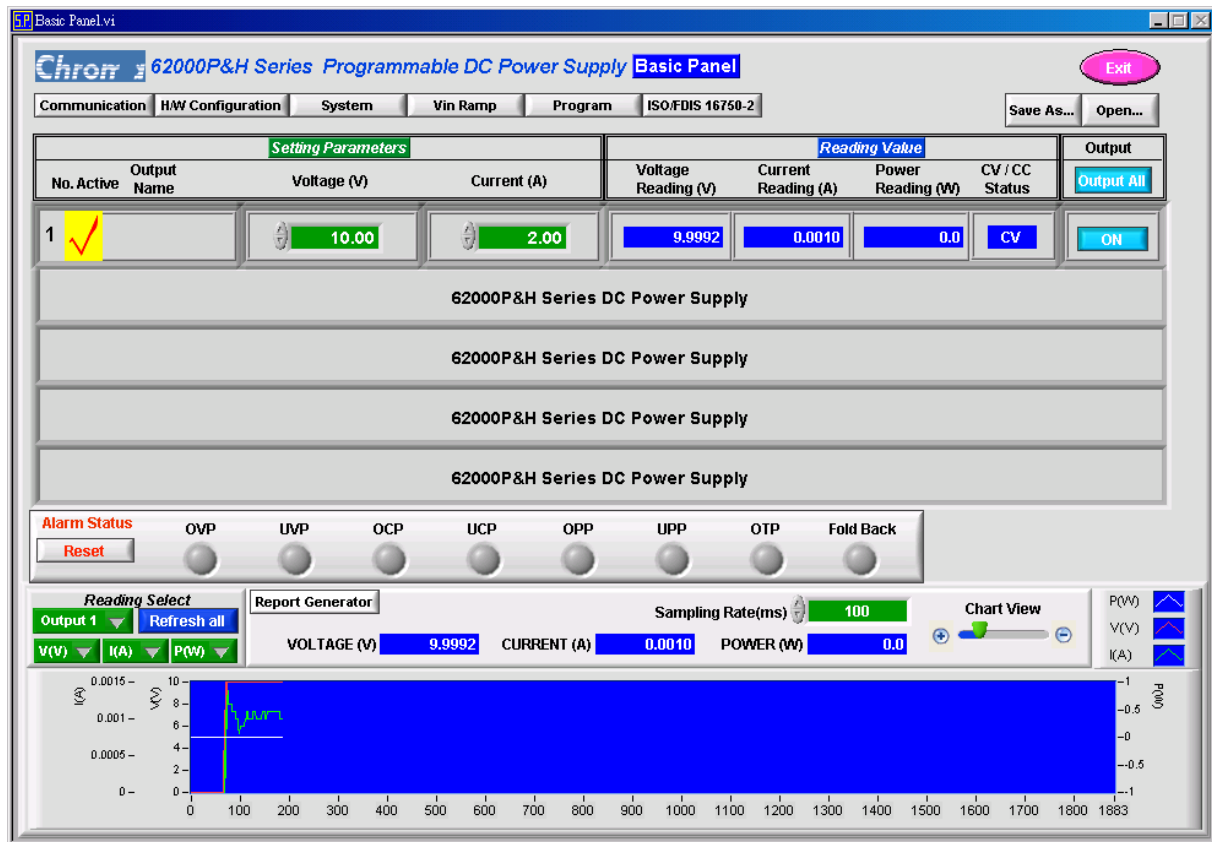


Figure 5-1 Basic Panel

5.1 Function of Basic Panel

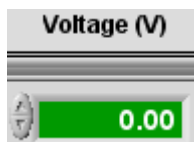
The main function of Basic Panel provides the output settings of voltage, current and etc. for DC Power Supply. It follows the Sample Rate (ms) interval to return the displayed voltage, current power, CV-CC transient state when the stand-alone unit outputs. It is also able to draw the reading curves of voltage, current, and power.

5.2 Button Description

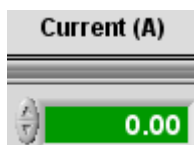
The function keys on the first and second rows are same as the one in Hardware Configuration Panel. For details please see the description of them in that section.

No. Active	Output Name
1	name

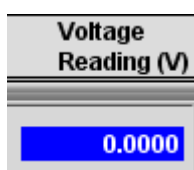
1. This is read only that shows the info of present index no. of stand-alone unit, active status and channel name.



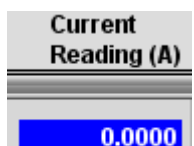
2. : It sets the voltage level of output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection for this channel.



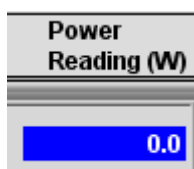
3. : It sets the current level of output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection for this channel.



4. : It shows the voltage reading of present channel dynamically when the stand-alone unit outputs. The unit is Volt.



5. : It shows the current reading of present channel dynamically when the stand-alone unit outputs. The unit is Ampere.



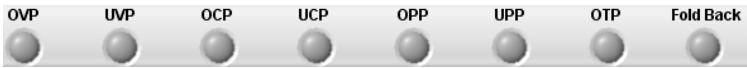
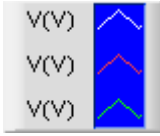
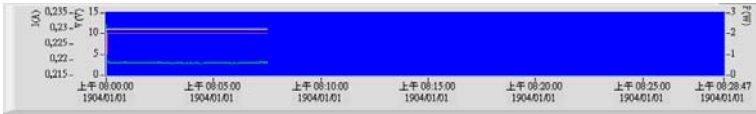
6. : It shows the power reading of present channel dynamically when the stand-alone unit outputs. The unit is Watt.



7. : It shows the output mode. (CV: Constant Voltage Mode, CC: Constant Current Mode.) It shows -- when the output is OFF.



8. : It sets the output control where All Off can control multiple channels to simulate simultaneous output or shutdown by software (not hardware.)

9.  : It clears the protection that occurred to the stand-alone unit. (It also clears the protection warning light showed on the screen.)
10.  : It is the warning lights display in the sequence of Over Voltage Protection, Under Voltage Protection, Over Current Protection, Under Current Protection, Over Power Protection, Under Power Protection, Over Temperature Protection and CC-CV mode transient.
11.  : They are the readings curve control and selection keys.
 : It selects the channel number to draw the readings curve.
 : It clears the readings curve of all channels.
 : There are three identical control keys to draw the curves of voltage, current, and power or to turn off the curve drawing action. Maximum three curves can be drawn at the same time.
12.  : It sets the interval of two readings when retuning the readings continuous. The unit is millisecond (ms).
13.  : It shows the voltage readings of present channel in Volt when the stand-alone unit outputs.
14.  : It shows the current readings of present channel in Ampere when the stand-alone unit outputs.
15.  : It shows the power readings of present channel in Watt when the stand-alone unit outputs.
16.  : It adjusts the X coordinate of readings curve to zoom in and out vertically for checking variations.
17.  : It adjusts the attributes such as color and thickness of the mapping readings curve.
18.  : It shows the readings curve with maximum three of them displayed at the same time.

19. : It saves the present settings as a parameter setting file (*.bps) and the  button can open it.
20. : It ends the program and prompt warning message if any for confirmation.

6. Vin Ramp Test Panel & Button Description

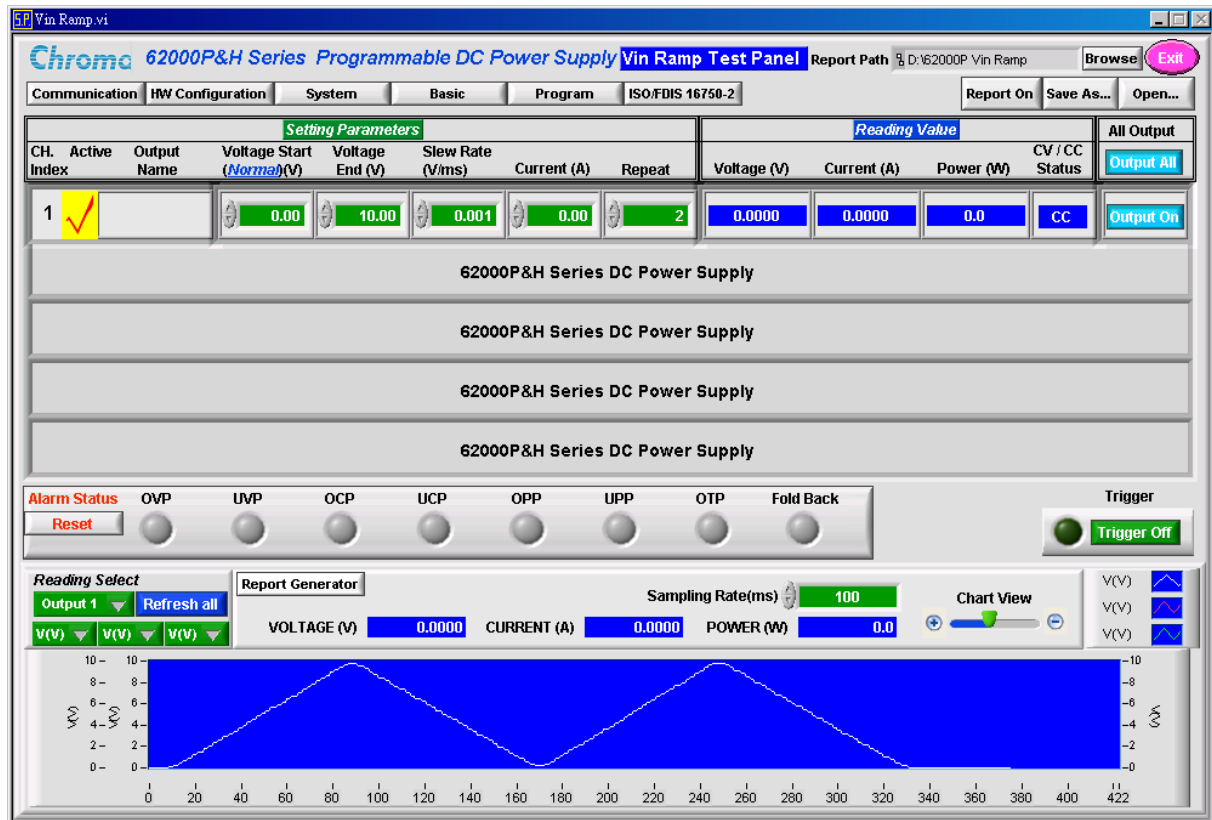


Figure 6-1 Vin Ramp Test Panel

6.1 Function of Vin Ramp Test Panel

The main function of Vin Ramp Test Panel provides the waveform output of specific voltage slew rate for DC Power Supply. It follows the Sample Rate (ms) interval to return the displayed voltage, current power, CV-CC transient state when the stand-alone unit outputs. It is also able to draw the readings curves of voltage, current, and power with text (*.TXT) file generated for report.

6.2 Button Description

The function keys on the first and second rows are same as the one in Hardware Configuration Panel. For details please see the description of them in that section.

No. Active	Output Name
1 	name

1. : This is read only that shows the info of present index no. of stand-alone unit, active status and channel name.

Voltage Start (Normal)(V)


2. : It sets the start voltage or normal output voltage for Vin Ramp. When Vin Ramp is done, it will return to the set voltage automatically. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection for this channel.

Voltage End (V)


3. : It sets the end voltage for Vin Ramp. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection for this channel.

Slew Rate (V/ms)


4. : It sets the rising and falling slew rate of present voltage output. The unit is volt per second.

Current (A)


5. : It sets the current level of output terminal. A reasonable range for setting will be given after calculated based on the hardware specification of connected stand-alone model and the serial/parallel connection for this channel.

Repeat


6. : It sets the number of repetition for triggering Vin Ramp, the range is 1~15000.

Trigger




7. : It sets the voltage output and Vin Ramp trigger state as below:
 : It sets the voltage output of the channel.

Trigger Off : It triggers Vin Ramp at any time after voltage output and all channels are applied.

8. **Save As...** **Open...** : It saves the present settings as a parameter setting file (*.vrs) and the **Open...** button can open it.

9. **Report On** : It sets the Report On or Off. When Report On is set, a text report (*.txt) will be generated for the tested readings including voltage, current, power, test time and related parameters.

62000P Vin Ramp Report - Notepad

File Edit Format View Help

Test mode : Vin Ramp Test
Date & Time of report : 2007/04/24 , 14:38:04

Test channel 1: 1

Setting value :

```

=====
voltage Start (V) :0.00
voltage End (V) :50.00
voltage Slew Rate (V/ms) :0.010
Current (A) :1.00
Repeat :3
=====

```

Reading value :

Time (Sec)	voltage (V)	Current (A)	Power (W)
2007/ 4/ 24 , 14: 37 : 21	0.0000	0.2132	0.0
2007/ 4/ 24 , 14: 37 : 21	0.0000	0.2132	0.0
2007/ 4/ 24 , 14: 37 : 21	0.0000	0.2132	0.0
2007/ 4/ 24 , 14: 37 : 22	0.0000	0.2133	0.0
2007/ 4/ 24 , 14: 37 : 22	0.0000	0.2133	0.0
2007/ 4/ 24 , 14: 37 : 22	0.0000	0.2133	0.0
2007/ 4/ 24 , 14: 37 : 23	23.3730	0.2810	6.6
2007/ 4/ 24 , 14: 37 : 23	23.3730	0.2810	6.6
2007/ 4/ 24 , 14: 37 : 24	23.3730	0.2810	6.6
2007/ 4/ 24 , 14: 37 : 24	49.9980	0.2226	11.1
2007/ 4/ 24 , 14: 37 : 24	49.9980	0.2226	11.1
2007/ 4/ 24 , 14: 37 : 25	49.9980	0.2226	11.1
2007/ 4/ 24 , 14: 37 : 25	11.3130	0.1588	1.8
2007/ 4/ 24 , 14: 37 : 25	11.3130	0.1588	1.8
2007/ 4/ 24 , 14: 37 : 26	11.3130	0.1588	1.8
2007/ 4/ 24 , 14: 37 : 26	0.0000	0.2128	0.0
2007/ 4/ 24 , 14: 37 : 26	0.0000	0.2128	0.0
2007/ 4/ 24 , 14: 37 : 27	0.0000	0.2128	0.0
2007/ 4/ 24 , 14: 37 : 27	39.4320	0.3404	13.4
2007/ 4/ 24 , 14: 37 : 27	39.4320	0.3404	13.4
2007/ 4/ 24 , 14: 37 : 28	39.4320	0.3404	13.4
2007/ 4/ 24 , 14: 37 : 28	49.9980	0.2221	11.1
2007/ 4/ 24 , 14: 37 : 29	49.9980	0.2221	11.1
2007/ 4/ 24 , 14: 37 : 29	49.9980	0.2221	11.1
2007/ 4/ 24 , 14: 37 : 29	10.7920	0.1541	1.7
2007/ 4/ 24 , 14: 37 : 30	10.7920	0.1541	1.7
2007/ 4/ 24 , 14: 37 : 30	10.7920	0.1541	1.7
2007/ 4/ 24 , 14: 37 : 30	0.0000	0.2127	0.0
2007/ 4/ 24 , 14: 37 : 31	0.0000	0.2127	0.0
2007/ 4/ 24 , 14: 37 : 31	0.0000	0.2127	0.0
2007/ 4/ 24 , 14: 37 : 31	37.0470	0.3400	12.6
2007/ 4/ 24 , 14: 37 : 32	37.0470	0.3400	12.6

Figure 6-2 Report Contents

10. **Report Path** **Browse** : It shows the path for placing the specified report and the path can be reselected by clicking Browse.

See the chapter of *Basic Panel & Button Description* for the details of the buttons that are not covered here.

7. Program Panel & Button Description

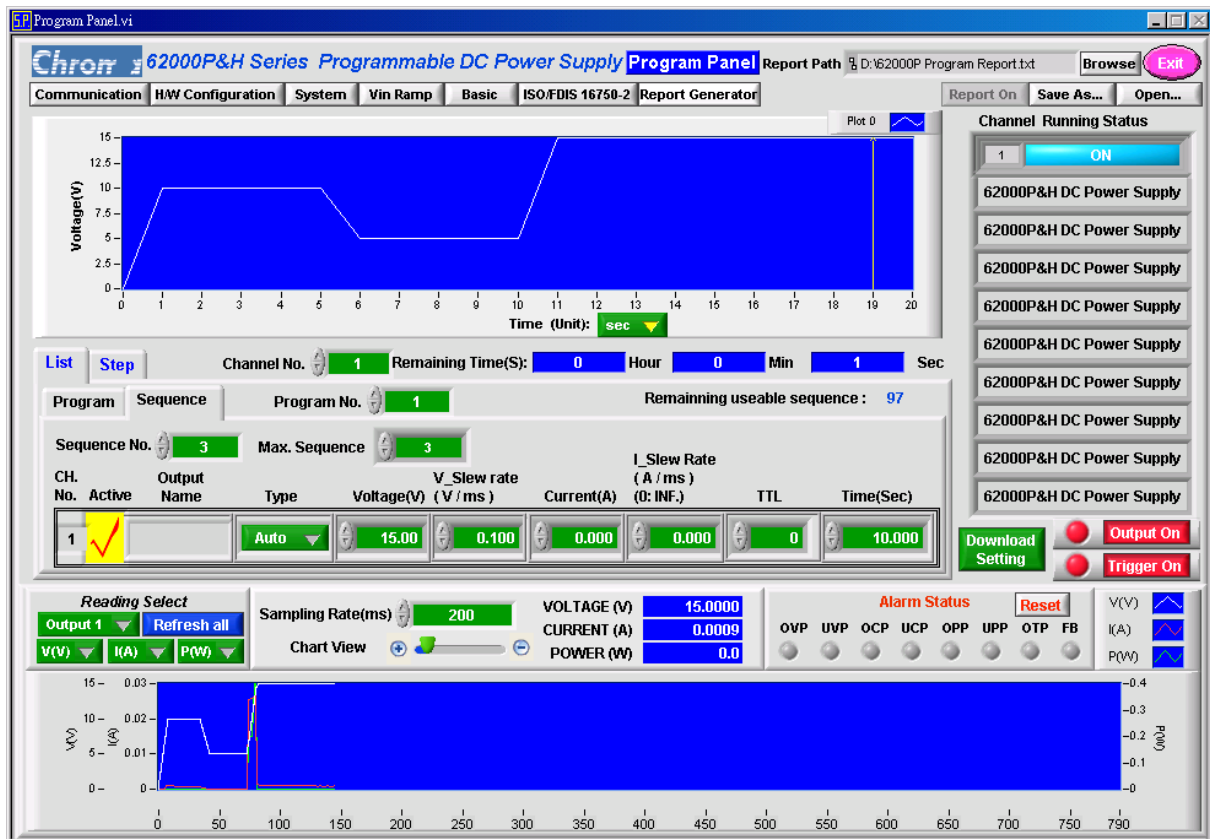


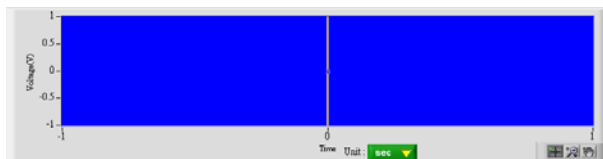
Figure 7-1 Program Panel

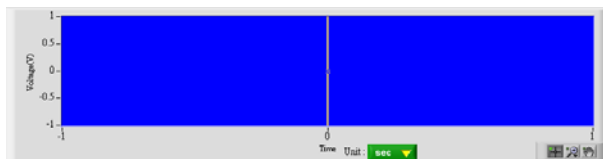
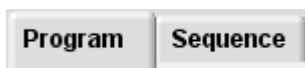
7.1 Function of Program Panel

The main function of Program Panel is to edit specific voltage waveform for DC Power Supply to output. It has LIST and STEP editing modes. List mode is able to edit the voltage waveforms that varied within specification and output them repeatedly; while Step mode can edit the rising or falling waveform output with specific increment or decrement. It follows the Sample Rate (ms) interval to return the displayed voltage, current power, CV-CC transient state when the stand-alone unit outputs. It is also able to draw the readings curves of voltage, current, and power with text (*.TXT) file generated for report.

7.2 Button Description

The function keys on the first and second rows are same as the one in Hardware Configuration Panel. For details please see the description of them in that section.



1.  : It simulates the edited List or Step waveform dynamically. The time unit for X-axis can be set to second or millisecond (ms) by . When voltage outputs, the Y axis will appear a dynamic cursor to cross mark the waveform relative position for present output. (The resolution is limited and List mode is unable to display the chained waveform.)
2.  : It is the Program mode selection for switching between List and Step to display related parameter settings.
3.  : It selects the channel number for setting parameters.
4.  : It estimates and counts down the time required for Program Run in hour, minute and second. When the program is executing, it will count down till 0 dynamically. If Unlimited is appeared, it indicates the Program time cannot be estimated for instance when Chain is set to its Program No. or Sequence Type is set to Manual, Trigger and etc.
5.  : It selects the channel number for the program to be edited. A reasonable range for setting will be given based on the serial/parallel connection for this channel that is the CH. Index range showed in System Configuration Panel.
6.  : List mode has Program and Sequence two tabs for setting the parameters.
7. Parameters in the Tabs under LIST Mode:
List mode is able to edit the voltage waveforms that varied within specification and output them repeatedly. There are two tab pages for setting as Figure 7-2 and Figure 7-3 shows.

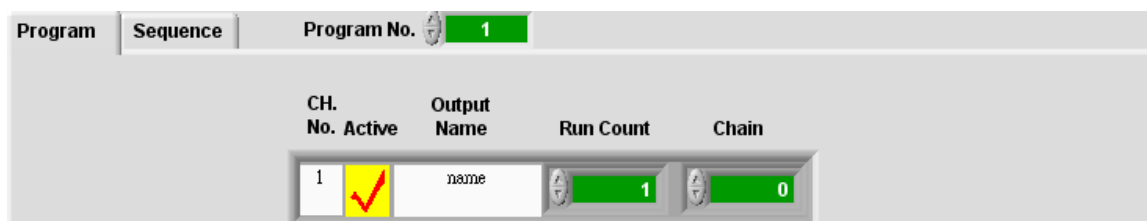


Figure 7-2 LIST Mode Tab 1

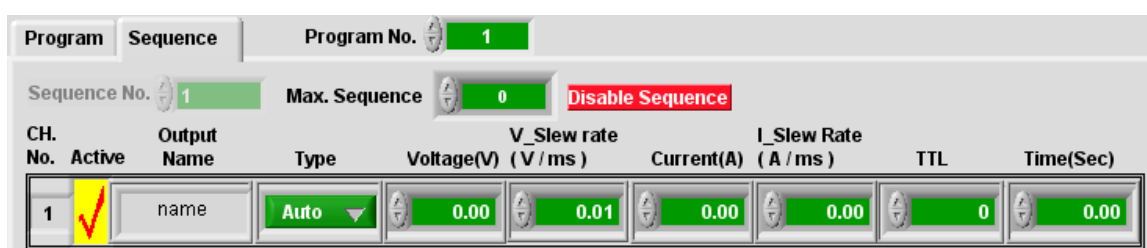


Figure 7-3 LIST Mode Tab 2

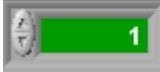
■ LIST Mode Tab1:

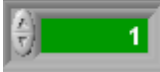
- a.  : It selects the edited program number from 1~10. (Each stand-alone unit can have 1~10 programs.)

CH. No.	Active	Output Name
1		name

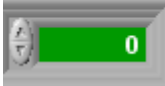
- b.  : This is read only that shows the info of present index no. of stand-alone unit, active status and channel name.

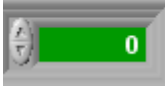
Run Count



- c.  : Each program has its own RUN CONUT and it indicates the number of times the program executes. The range is 1 ~ 15000.

Chain



- d.  : It sets the next program number for execution. Ex. If the Program No of this channel is set to 2 and Chain is set to 6, the execution sequence will be Program 2 first and then Program 6 second.

■ LIST Mode Tab 2:

- e.  : It sets the sequence numbers in a program. A program can have maximum 100 sequences, so the range is 1 ~ 100. However, the total sequences cannot exceed 100 for 10 programs.

- f.  : It sets the maximum sequence number for the program to be edited. A program can have maximum 100 sequences, so the range is 1 ~ 100. However, the total sequences cannot exceed 100 for 10 programs. When it is set to 0, a **Disable Sequence** message will appear to indicate the program has not set any sequence and is unable to trigger the program for execution. When it is greater than 0, the remaining available sequences will appear automatically at the upper right on LIST tab, for instance **Remaining useable sequence : 99**.

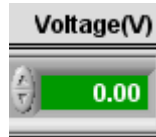
Type



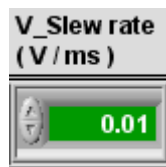
- g.  : There are 4 Sequence Types: (1) AUTO, (2) MANUAL, (3) EXT. TRIGGER, (4) SKIP.

- (1) Set TYPE = AUTO indicates that the Sequence will execute automatically and will go to next Sequence when done.

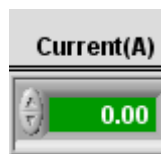
- (2) Set TYPE = MANUAL indicates the Sequence will execute automatically and stop at the set voltage or current without jumping to next Sequence until any key on the front panel is press.
- (3) Set TYPE = TRIGGER indicates that the Sequence will execute automatically and stop at the set voltage or current without jumping to next Sequence until a positive pulse is input to PIN 8 of Analog Interface on the rear panel.
- (4) Set TYPE = SKIP indicate s that the Sequence will be ignored and skipped to next Sequence directly.



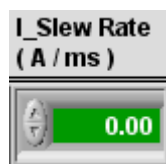
- h. : It sets the Sequence output voltage in the unit of Volt. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



- i. : It sets the voltage slew rate of the Sequence in the unit of Volt/per ms.



- j. : It sets the maximum current output of the Sequence in the unit of Ampere. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



- k. : It sets the current slew rate of the Sequence.



- l. : It sets the digital output state of the Sequence.



- m. : It sets the output duration of the Sequence. The setting of time is only valid when Sequence TYPE = AUTO.

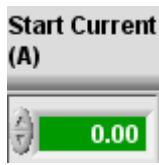
8. STEP Mode Tab Parameters:
STEP Mode can edit the rising or falling waveform output for specific increment or decrement.



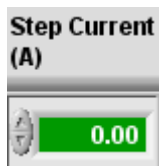
- a. : It sets the start output voltage of the Program in the unit of Volt. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



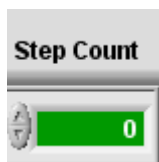
- b. : It sets ascending or descending step voltage for the Program in the unit of Volt. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



- c. : It sets the start current output limit of the Program in the unit of Ampere. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



- d. : It sets ascending or descending step current output limit for the Program in the unit of Ampere. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.



- e. : It sets the step count of the Program in the range of 0~ 100.



- f. : It sets the step duration of each Program in the unit of second. The range is 0~ 10000.



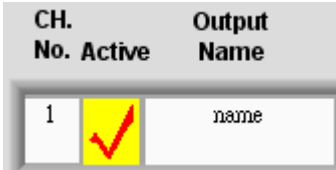
- g. : It sets the number of times to execute the Program repeatedly. The range is 1~ 10000.

9. New Step Mode Tab Parameters:

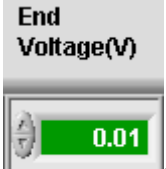
New Step Mode can edit the start and end of rising or falling waveform output. It can also edit the rising or falling time estimated to spend. The time can be set is hour, minute and second as Figure 7-4 shows.

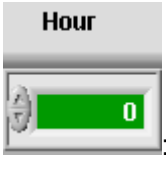
No. Active	Output Name	Start Voltage (V)	End Voltage(V)	Hour	Minute	Second
1 		 0.00	 0.01	 0	 0	 0

Figure 7-4 New Step Mode Tab Parameters

- a. : It shows the channel number, active status and output name of this stand-alone model. It is read only.

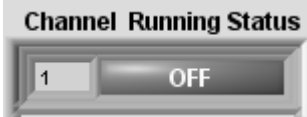
- b. : It sets the start output voltage of the Program in the unit of Volt. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.

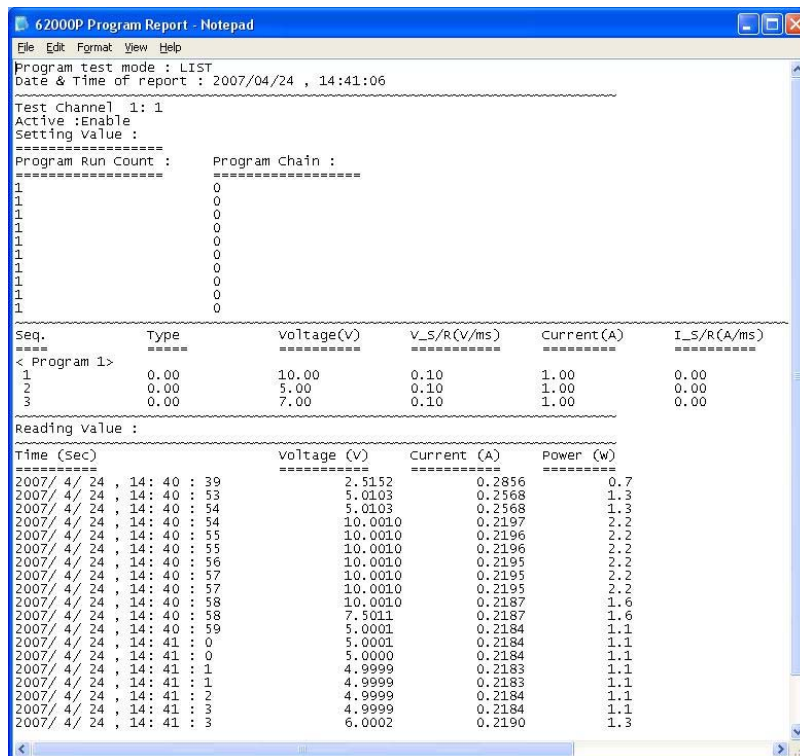
- c. : It sets the end output voltage of the Program in the unit of Volt. A reasonable range for setting will be given based on the hardware specification of connected stand-alone model for this channel.

- d. : It sets the time the Program runs in the unit of hour.

- e. : It sets the time the Program runs in the unit of minute.

- f. : It sets the time the Program runs in the unit of second.

10.  : It shows the channel state to be ON or OFF dynamically when the Program is running.
11.  : It triggers the execution of Program. When Trigger is On, it indicates the Program is running and the left LED will be on at the same time.
12.  : It shows the voltage output status. When the voltage and current parameters are set in Basic Panel, the device can output the voltage first before the Program is triggered for execution. The LED on the left side will show the output status simultaneously.
13.  : It downloads the set parameters of present Program to DC Power Supply without executing output immediately. It will ask users if to save it as power on default.
14.  : It saves the present settings as a parameter setting file (*.pss) and the **Open...** button can open it.
15.  : It sets the Report On or Off. When Report On is set, a text report (*.txt) will be generated for the tested readings including voltage, current, power, test time and related parameters.



62000P Program Report - Notepad

File Edit Format View Help

Program test mode : LIST
Date & Time of report : 2007/04/24 , 14:41:06

Test channel 1: 1
Active :Enable
Setting value :
=====

Program Run Count : Program Chain :
=====

1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Seq.	Type	voltage(V)	V_S/R(V/ms)	Current(A)	I_S/R(A/ms)
< Program 1>					
1	0.00	10.00	0.10	1.00	0.00
2	0.00	5.00	0.10	1.00	0.00
3	0.00	7.00	0.10	1.00	0.00

Reading value :

Time (Sec)	voltage (V)	Current (A)	Power (W)
2007/ 4/ 24 , 14: 40 : 39	2.5152	0.2856	0.7
2007/ 4/ 24 , 14: 40 : 53	5.0103	0.2568	1.3
2007/ 4/ 24 , 14: 40 : 54	5.0103	0.2568	1.3
2007/ 4/ 24 , 14: 40 : 54	10.0010	0.2197	2.2
2007/ 4/ 24 , 14: 40 : 55	10.0010	0.2196	2.2
2007/ 4/ 24 , 14: 40 : 55	10.0010	0.2196	2.2
2007/ 4/ 24 , 14: 40 : 56	10.0010	0.2195	2.2
2007/ 4/ 24 , 14: 40 : 57	10.0010	0.2195	2.2
2007/ 4/ 24 , 14: 40 : 57	10.0010	0.2195	2.2
2007/ 4/ 24 , 14: 40 : 58	10.0010	0.2187	1.6
2007/ 4/ 24 , 14: 40 : 58	7.5011	0.2187	1.6
2007/ 4/ 24 , 14: 40 : 59	5.0001	0.2184	1.1
2007/ 4/ 24 , 14: 41 : 0	5.0001	0.2184	1.1
2007/ 4/ 24 , 14: 41 : 0	5.0000	0.2184	1.1
2007/ 4/ 24 , 14: 41 : 1	4.9999	0.2183	1.1
2007/ 4/ 24 , 14: 41 : 1	4.9999	0.2183	1.1
2007/ 4/ 24 , 14: 41 : 2	4.9999	0.2184	1.1
2007/ 4/ 24 , 14: 41 : 3	4.9999	0.2184	1.1
2007/ 4/ 24 , 14: 41 : 3	6.0002	0.2190	1.3

Figure 7-5 Report Contents

16. **Report Generator**: Click this button in Program and ISO/FDIS 16750-2 test windows will prompt a text file report generator as Figure 7-6 shows for setting parameters. This function can record the voltage, current and power readings of each channel during test and outputs them to a text file for a long time. The format is shown in Figure 7-7 where Ch_1 indicates the readings of the 1st channel and so forth.

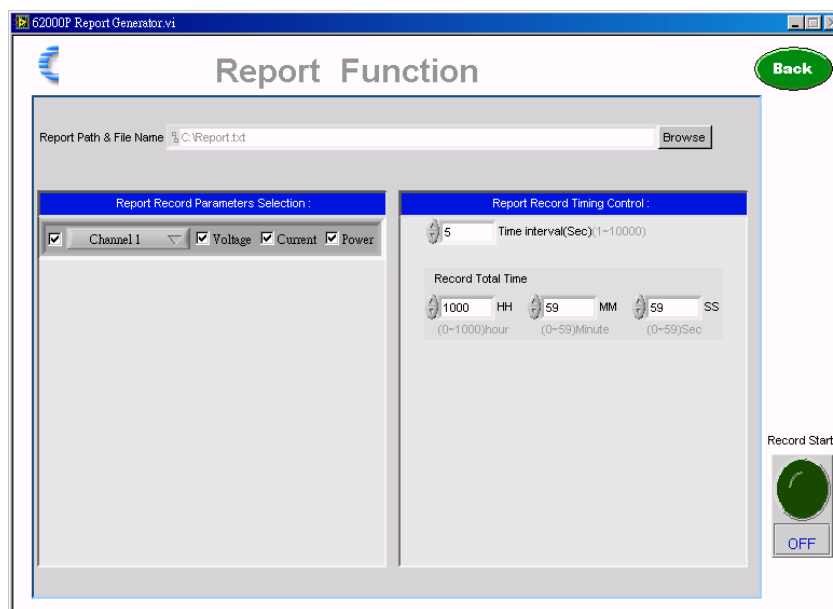


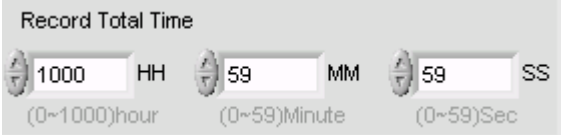
Figure 7-6 Parameters Setting for Text File Report Generator

Time	Ch_1 Voltage(V)	Ch_1 Current(A)	Ch_1 Power(W)
2012/09/13 11:31:29	0.0000	0.0000	0.0
2012/09/13 11:31:33	14.0010	0.0008	0.0
2012/09/13 11:31:38	0.0089	0.0000	0.0
2012/09/13 11:31:43	0.0128	0.0000	0.0
2012/09/13 11:31:48	0.0128	0.0000	0.0
2012/09/13 11:31:53	0.0128	0.0000	0.0

Figure 7-7 Text Report

Parameters in Report Generator:

- Report Path & File Name**: It specifies the path and file name with .txt extension. A dialog box will prompt to add a new file or overwrite the existing file.
- ☒ Channel 1 ☒ Voltage ☒ Current ☒ Power**: It selects the types of channel readings to output to text file.
- 5 Time interval(Sec)(1~10000)**: It sets the recording time interval and the maximum is 10000 seconds.

- d.  : It sets the total time for recording. The format is hour, minute, second. It stops recording when the time is due.

Record Start

- e.  : It turns the recording on or off.

- f.  : It ends the settings and returns to the main window.

See the chapter of *Basic Panel & Button Description* for the details of the buttons that are not covered here.

8. ISO 16750-2 Test Panel & Button Description

The road vehicles test regulations of ISO 16750-2 mainly include 5 items: Starting Profile, Reset Behavior at Voltage Drop, Momentary Drop in Supply Voltage, Slow Decrease and Increase of Voltage, and Battery Voltage Dropout. Figure 8-1 shows the test screen and users can based on their requirements to select the test items for test. When in the tab page of each test item, ensure the default setting parameters meet the requirements and click “Trigger” to conduct the test. Users can use DSO to check the output voltage or watch the output timing status via Waveform Graph. In addition users need to pay attention to the notation on the lower part of the screen. It is necessary to load a fixed current to ensure the voltage slew rate meets the requirements. The following sections explain the 4 regulations mentioned above and only one DC Power Supply can be used for test when doing regulation test.

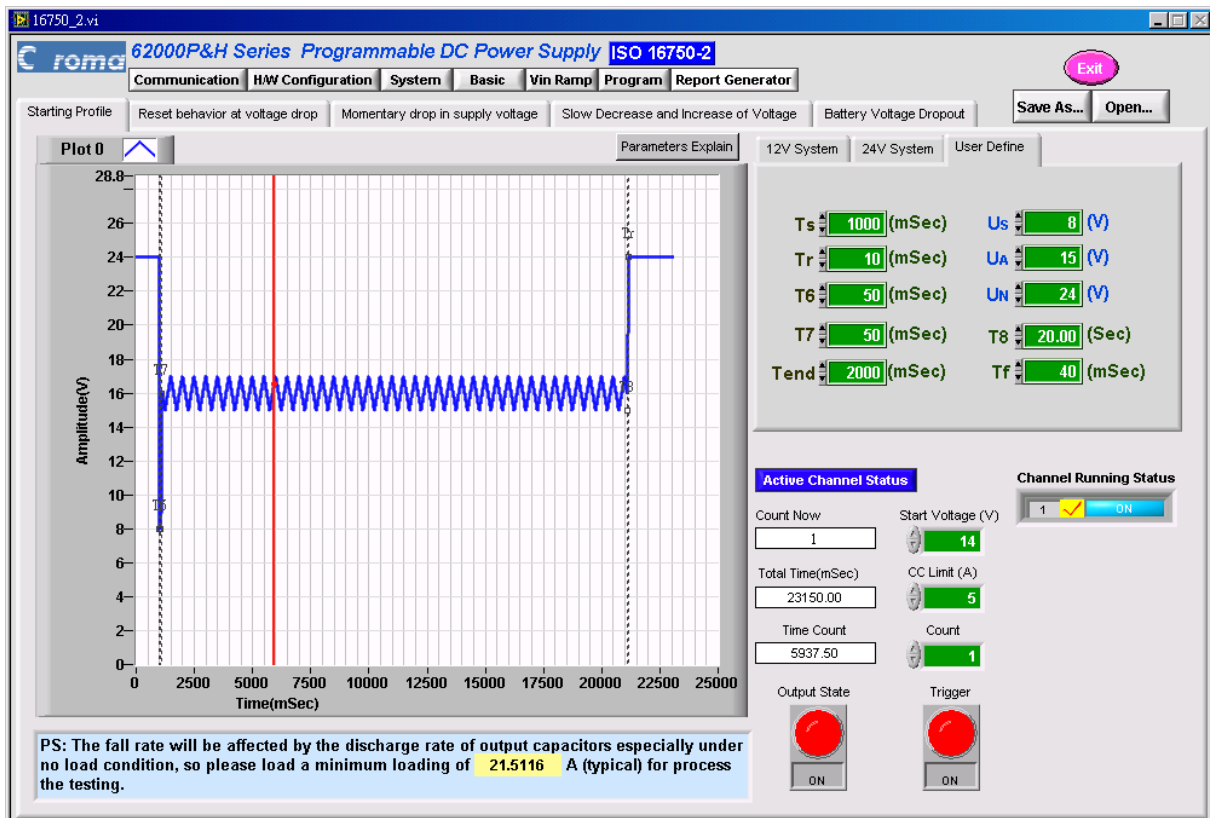


Figure 8-1 ISO 16750-2 Test Panel

8.1 Starting Profile

When in “Starting Profile” tab page, click one of the System tabs at right and set the initial voltage output, current Limit as well as the Count number. Check the notation area to make sure the output has been loaded to the specified current. Click **Trigger** to conduct the test after the confirmation is done.

The time axis on the Waveform Graph that indicates the progress and the count number on 'Count Now' as well as the execution time on 'Time Count' can be checked during test.

The following describes the setting and display elements.

Description of setting elements: They are System, Count, CC Limit and Trigger on the left side of the screen.

- System Tabs: There are 12V System, 24V System and User Define.

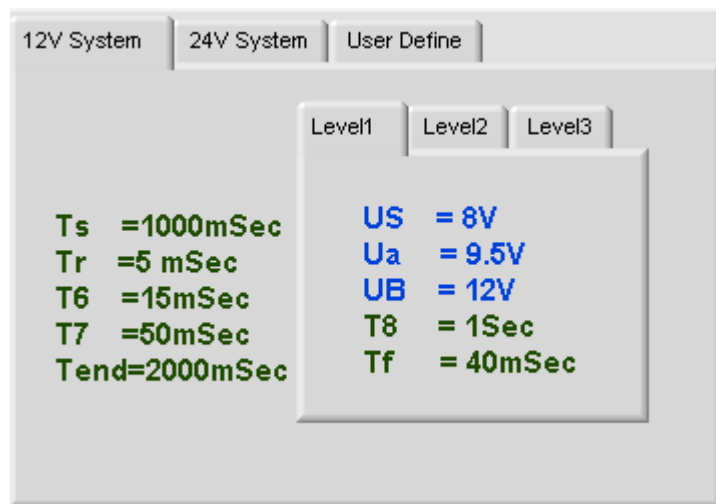


Figure 8-2 System Tabs of Starting Profile

- **12V System**

There are Level1, Level2 and Level3 available for selection. The common parameters are: Ts set to 1000mSec, Tr set to 5 mSec, T6 set to 15 mSec, T7 set to 50 mSec and Tend set to 2000mSec. Then set Us, Ua, UB, T8 and Tf based on the Level selected.

- * Level1: Us set to 8V, Ua set to 9.5V, UB set to 12V, T8 set to 1Sec and Tf set to 40 mSec.
- * Level2: Us set to 4.5V, Ua set to 6.5V, UB set to 12V, T8 set to 10Sec and Tf set to 100 mSec.
- * Level3: Us set to 8V, Ua set to 9.5V, UB set to 12V, T8 set to 1Sec and Tf set to 40 mSec.

- **24V System**

- * Only Level 1: The parameters are Ts set to 1000mSec, Tr set to 10mSec, T6 set to 50 mSec, T7 set to 50 mSec, Tend set to 2000mSec, Us set to 8V, Ua set to 15V, UB set to 24V, T8 set to 1Sec and Tf set to 40 mSec.
- * Level2: Us set to 4.5V, Ua set to 6.5V, UB set to 12V, T8 set to 20Sec and Tf set to 40 mSec.

- **User Define**

All parameters can be user defined: Ts, Tr, T6, T7, Tend, Us, Ua, UB, T8 and Tf.

Below is the table of parameters for each level.

Parameter Name	12V system			24V system	User define
Level	Level 1	Level 2	Level 3	Level 1	
Ts	1000mSec	1000mSec	1000mSec	1000mSec	1000mSec(default)
Tr	5 mSec	5 mSec	5 mSec	10 mSec	10 mSec(default)
T6	15 mSec	15 mSec	15 mSec	50 mSec	50 mSec(default)
T7	50 mSec	50 mSec	50 mSec	50 mSec	50 mSec(default)
Tend	2000 mSec	2000 mSec	2000 mSec	2000 mSec	2000 mSec(default)
Us	8V	4.5V	8V	8V	8V(default)
Ua	9.5V	6.5V	9.5V	15V	15V(default)
UB	12V	12V	12V	24V	24V(default)
T8	1Sec	10Sec	1Sec	20Sec	20Sec(default)
Tf	40mSec	100mSec	40mSec	40mSec	40mSec(default)

Table 8-1 Starting Profile Parameters for Each Level

■ Start Voltage

It sets the start voltage before setting for regulation test. The default is 14V and the unit is volt.

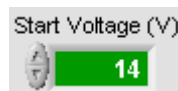


Figure 8-3 Start Voltage

■ CC Limit

It sets the limit for maximum current output. The default is 5A.



Figure 8-4 CC Limit

■ Count

It sets the number of test to be repeated. The default is 1.

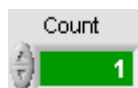


Figure 8-5 Count

■ Trigger

It executes or cancels test. Trigger On means to start the test sequentially based on the settings at present. To stop it, click it again will turn the Trigger Off.

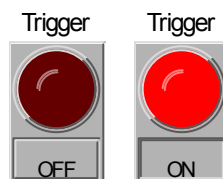


Figure 8-6 Trigger On/Off

The display elements are Waveform Graph, Count Now, Total Time and Time Count.

- **Waveform Graph:** It simulates the graph based on the voltage and time users set when different conditions are selected. Users can know the output execution timing first. Be aware that the output has to connect to a fixed loading so that the voltage rise rate can be the same as the simulation graph. On the Waveform Graph, an addition red vertical indicator will appear to scan rightward following the time axis when Trigger is on. It can tell the execution time of present count when mapping to the time on X-axis. The pink bold line on Waveform Graph is the simulation of voltage based on the time changes. The vertical dot lines indicate the Tr, T6, T7, T8 and Tf sections based on the settings.

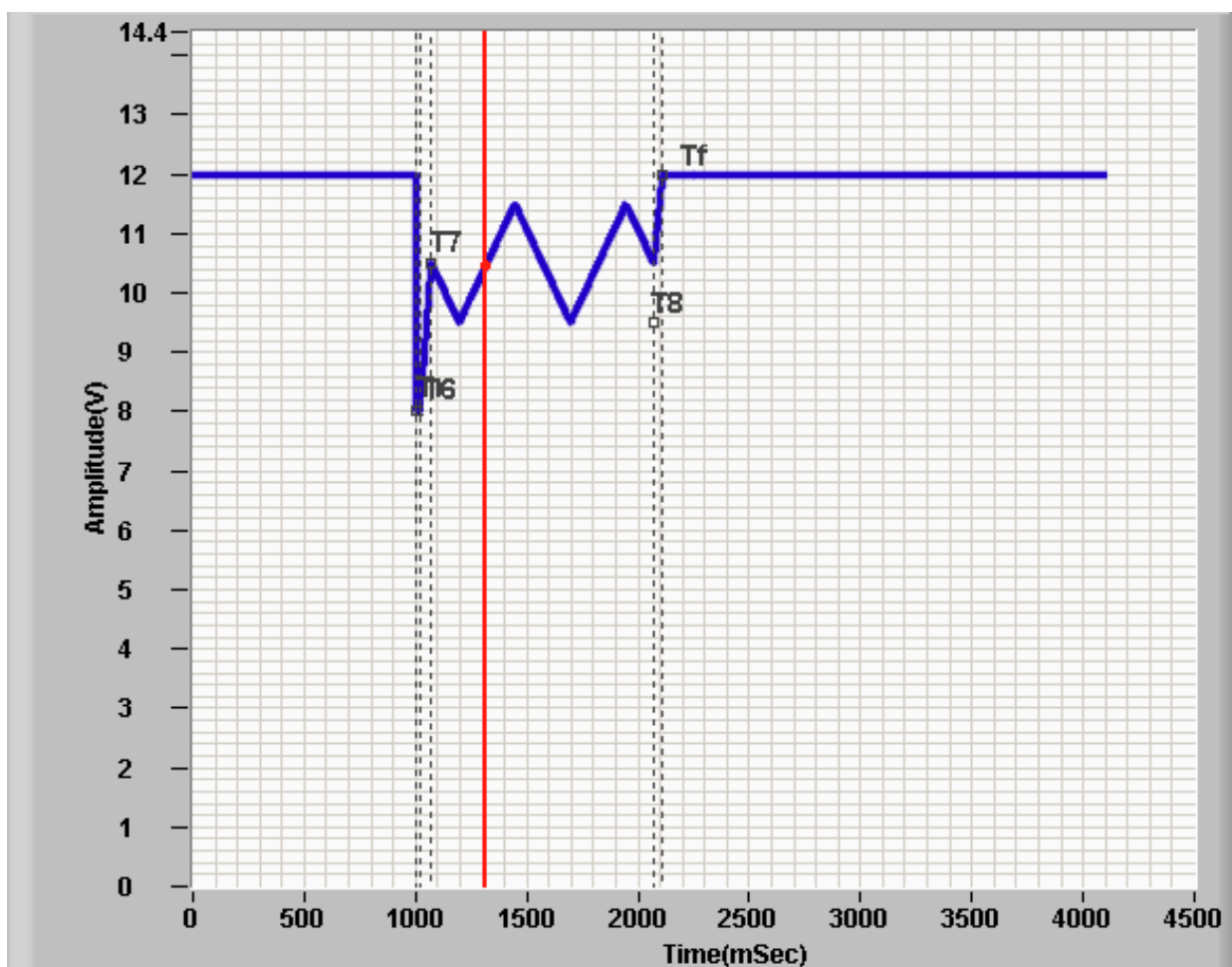


Figure 8-7 Waveform Graph

- **Parameter Explain:** It switches the Waveform Graph to regulation text for detail descriptions of Ts, Tr, T6, T7, Tend, T8 and Tf section. Click it when use.

Parameters Explain

Figure 8-8 Parameter Explain

- **Total Time:** It calculates the total execution time that is the sum of Ts, Tr, T6, T7, Tend, T8 and Tf to multiplying with the number of Count.

Total Time(mSec)

23150

Figure 8-9 Total Time

- Count Now: It indicates the number repeated. It turns to display element from gray scale only when Trigger is on.

Count Now
1

Figure 8-10 Count Now

- Time Count: The unit is mSec and only appears when Trigger is On to show the executed time.

Time Count
4500

Figure 8-11 Time Count

- Notation: It shows the output loading current under the present set conditions. The purpose is to make the Slew Rate to meet the regulation requirements when the voltage rises or falls during voltage change. Please use the same model when testing ISO16750-2 for multiple devices.

PS: The fall rate will be affected by the discharge rate of output capacitors (DC power supply) especially under no load condition, so please loading a minimum load of 2.65 A from DC power supply.

Figure 8-12 Notation

- **Active Channel Status**: A window will appear when clicked to show if the controlled devices are in active. Maximum 10 devices can be controlled and activated. °

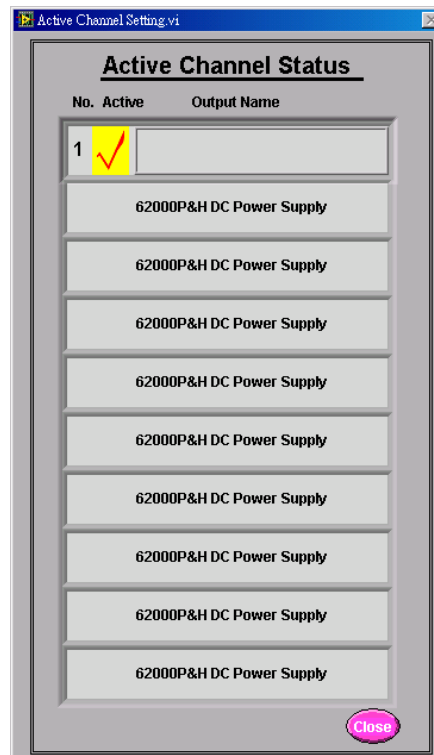


Figure 8-13 Active Channel Status for Controlled Devices



- It shows the regulation running status for controlled devices where ON indicates output and OFF means to stop output.



- It saves all parameters set in the User Define tab of current screen to be a parameter setting file (*.car). Click **Open...** can open the file for application.

For the elements that are the same in Basic Panel, see the chapter of *Basic Panel & Button Description* for detail description.

8.2 Reset Behavior at Voltage Drop

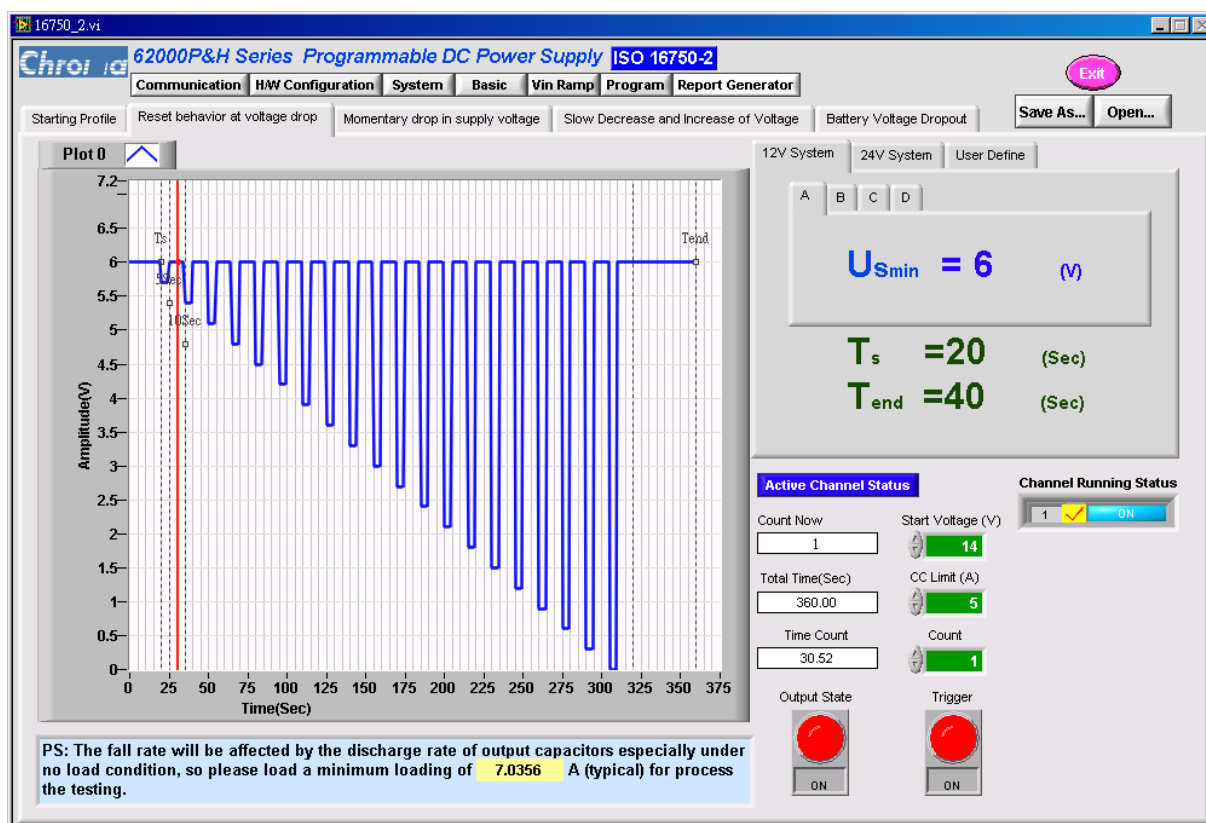


Figure 8-14 Main Screen of Reset Behavior at Voltage Drop

When in “Reset behavior at voltage drop” tab page, click one of the System tabs at right and set the current Limit as well as the Count number. Check the notation area to make sure the output has been loaded to the specified current. Click **Trigger** to conduct the test after the confirmation is done.

The time axis on the Waveform Graph that indicates the progress and the count number on “Count Now” as well as the execution time on “Time Count” can be checked during test.

The following describes the setting and display elements.

Description of setting elements: They are System, Count, CC Limit and Trigger on the left side of the screen.

- System Tabs: There are 12V System, 24V System and User Define.

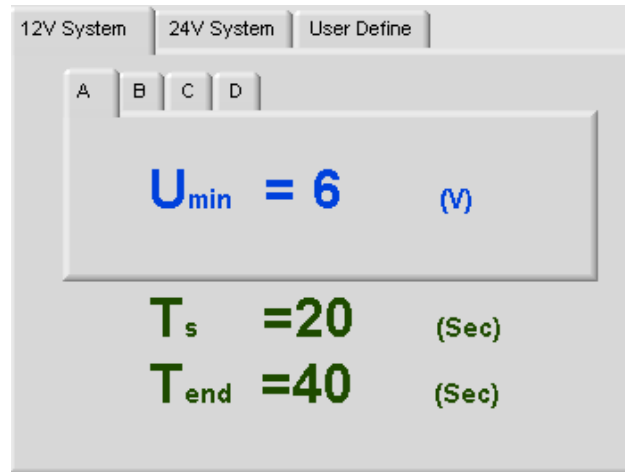


Figure 8-15 System Tabs of Reset Behavior at Voltage Drop

- **12V System**

There are A, B, C and D available for test. The common parameters are: Ts set to 20Sec and Tend set to 40Sec. Then set the Umin voltage based on the selection.

- * A: Umin set to 6V.
- * B: Umin set to 8V.
- * C: Umin set to 9V.
- * D: Umin set to 10.5V.

- **24V System**

There are E, F and G available for test. The common parameters are: Ts set to 20Sec and Tend set to 40Sec. Then set the Umin voltage based on the selection.

- * E: Umin set to 10V.
- * F: Umin set to 16V.
- * G: Umin set to 22V.

- **User Define**

All parameters can be user defined: Umin, Ts and Tend.

Below is the table of parameters for each level.

Parameter Name	12V system				24V system			User define
Level	A	B	C	D	E	F	G	
Ts	20Sec	20Sec	20Sec	20Sec	20Sec	20Sec	20Sec	1.5Sec (default)
Tend	40Sec	40Sec	40Sec	40Sec	40Sec	40Sec	40Sec	1.5Sec (default)
Umin	6V	8V	9V	10.5V	10V	16V	22V	1.5V (default)

Table 8-2 Reset Behavior at Voltage Drop Parameters for Each Level

- CC Limit: Same as Starting Profile.
- Count: Same as Starting Profile.
- Trigger: Same as Starting Profile.

The display elements are Waveform Graph, Count Now, Total Time and Time Count.

- Waveform Graph: It simulates the graph based on the voltage and time users set when different conditions are selected. Users can know the output execution timing first. Be aware that the output has to connect to a fixed loading so that the voltage rise rate can be the same as the simulation graph. On the Waveform Graph, an addition red vertical indicator will appear to scan rightward following the time axis when Trigger is on. It can tell the execution time of present count when mapping to the time on X-axis. The pink bold line on Waveform Graph is the simulation of voltage based on the time changes. T_s is the time U_{min} starts and it drops 5% to execute for 5Sec, then returns to U_{min} to execute for 10Sec. So the execution time in between is 290Sec, plus T_s and T_{end} the total time of a Count is 350 Sec. The total time of a Count can also be seen on the X-axis display.

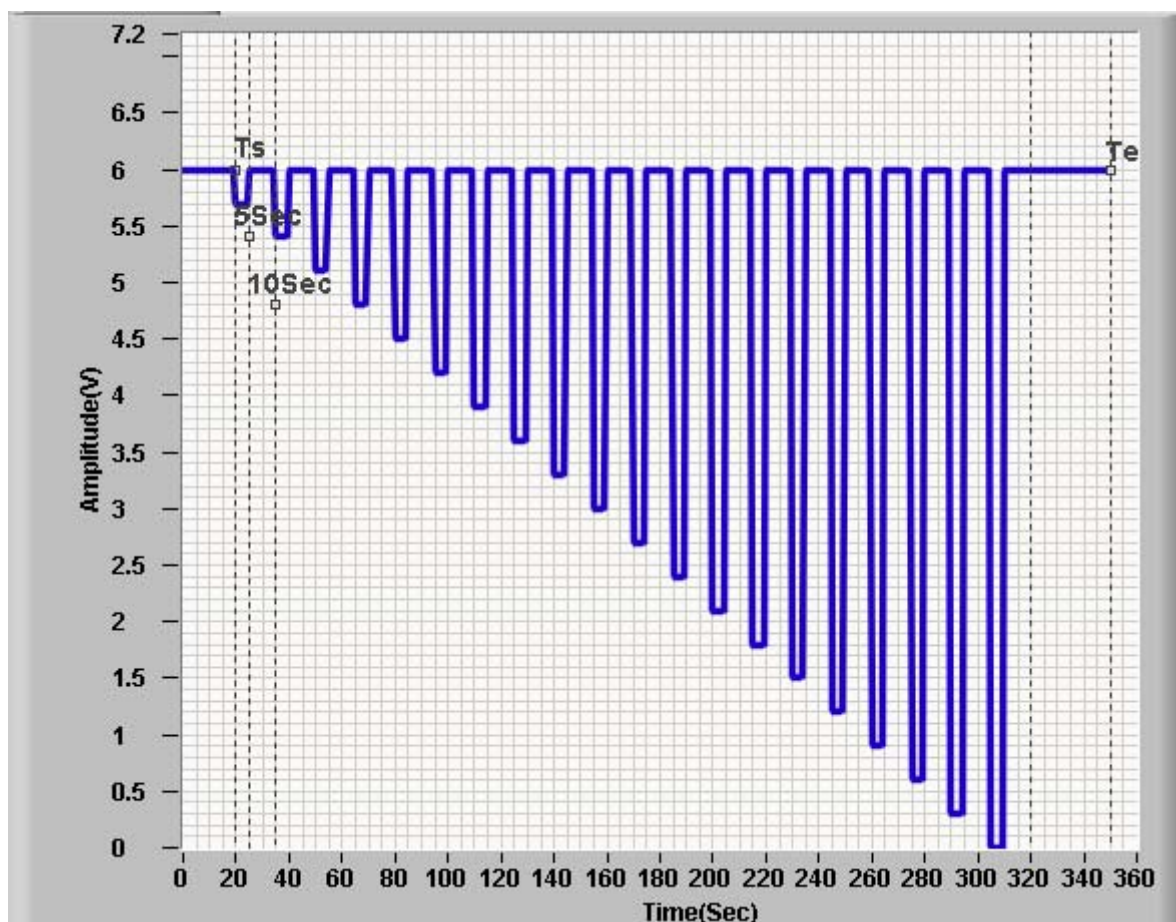


Figure 8-16 Waveform Graph

- Total Time: Same as Starting Profile, the unit is Sec.
- Count Now: Same as Starting Profile.

- Time Count: Same as Starting Profile.
- Notation: Same as Starting Profile.

8.3 Momentary Drop in Supply Voltage

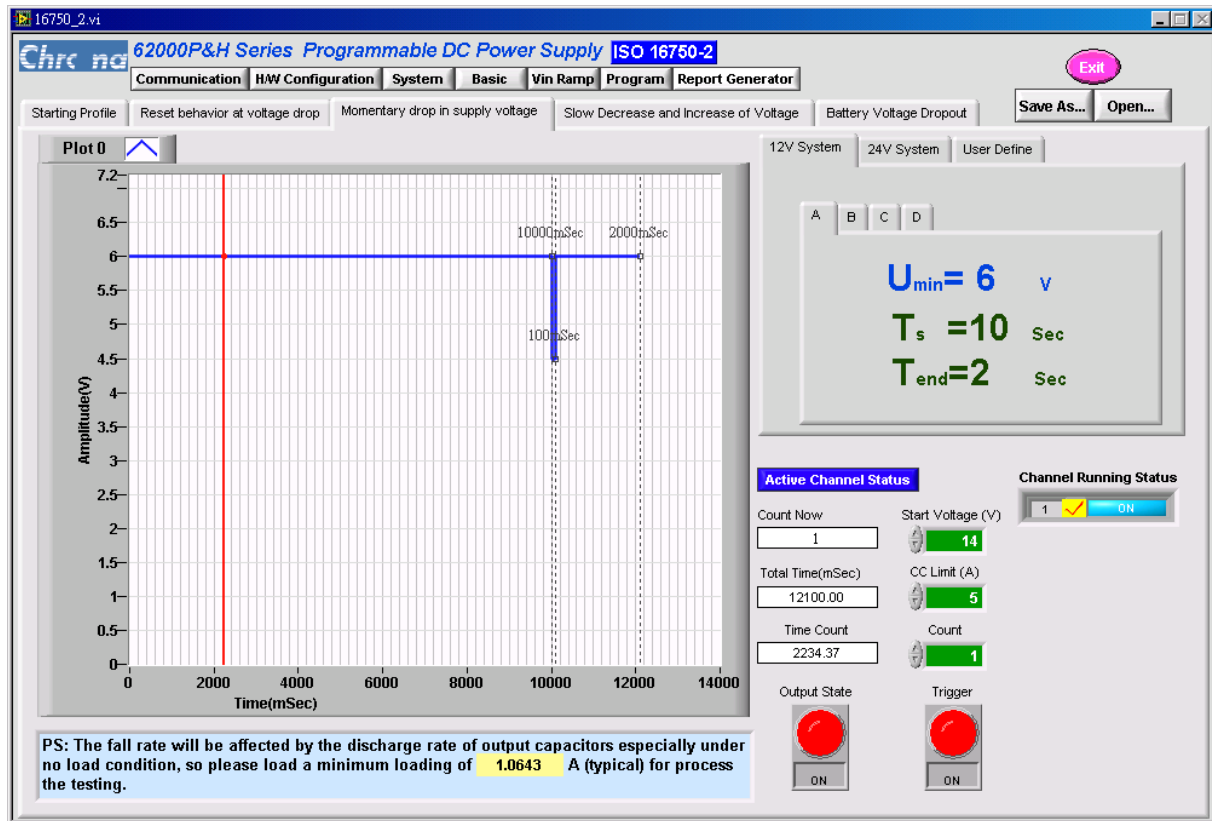


Figure 8-17 Main Screen of Momentary Drop in Supply Voltage

When in “Momentary drop in supply voltage” tab page, click one of the System tabs at right and set the current Limit as well as the Count number. Check the notation area to make sure the output has been loaded to the specified current. Click **Trigger** to conduct the test after the confirmation is done.

The time axis on the Waveform Graph that indicates the progress and the count number on “Count Now” as well as the execution time on “Time Count” can be checked during test.

The following describes the setting and display elements.

Description of setting elements: They are System, Count, CC Limit and Trigger on the left side of the screen.

- System Tabs: There are 12V System, 24V System and User Define.

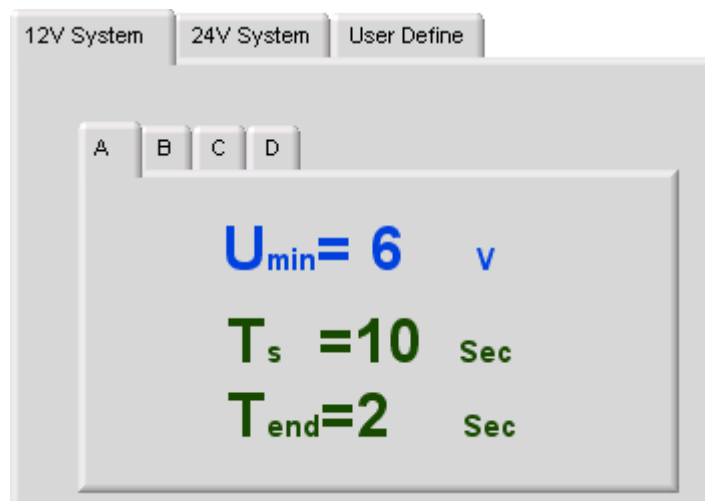


Figure 8-18 System Tabs of Momentary Drop in Supply Voltage

- **12V System**

There are A, B, C and D available for test. The common parameters are: Ts set to 10Sec and Tend set to 2Sec. Then set the Umin voltage based on the selection.

- * A: Umin set to 6V.
- * B: Umin set to 8V.
- * C: Umin set to 9V.
- * D: Umin set to 10.5V.

- **24V System**

There are E, F and G available for test. The common parameters are: Ts set to 10Sec , Tend set to 2Sec. Then set the Umin voltage based on the selection.

- * E: Umin set to 10V.
- * F: Umin set to 16V.
- * G: Umin set to 22V.

- **User Define**

All parameters can be user defined: Umin, Vdrop, Ts, Tend and Tdrop.

Below is the table of parameters for each level.

Parameter Name	12V system				24V system			User define
Level	A	B	C	D	E	F	G	
Ts	10Sec	10Sec	10Sec	10Sec	10Sec	10Sec	10Sec	5mS(default)
Tdrop	100mS	100mS	100mS	100mS	100mS	100mS	100mS	5mS(default)
Tend	2Sec	2Sec	2Sec	2Sec	2Sec	2Sec	2Sec	5mS(default)
Vdrop	4.5V	4.5V	4.5V	4.5V	9V	9V	9V	3V(default)
Umin	6V	8V	9V	10.5V	10V	16V	22V	6V(default)

Table 8-3 Momentary Drop in Supply Voltage Parameter

- CC Limit: Same as Starting Profile.
- Count: Same as Starting Profile.

- Trigger: Same as Starting Profile.

The display elements are Waveform Graph, Count Now, Total Time and Time Count.

- Waveform Graph: It simulates the graph based on the voltage and time users set when different conditions are selected. Users can know the output execution timing first. Be aware that the output has to connect to a fixed loading so that the voltage rise rate can be the same as the simulation graph. On the Waveform Graph, an addition red vertical indicator will appear to scan rightward following the time axis when Trigger is on. It can tell the execution time of present count when mapping to the time on X-axis. The pink bold line on Waveform Graph is the simulation of voltage based on the time changes. The T drop is 100 mSec in 12V and 24Vsystem. The vertical dot lines indicate the Ts, Tdrop execution time and Tend response time based on the settings. The total time of a Count can also be seen on the X-axis display.

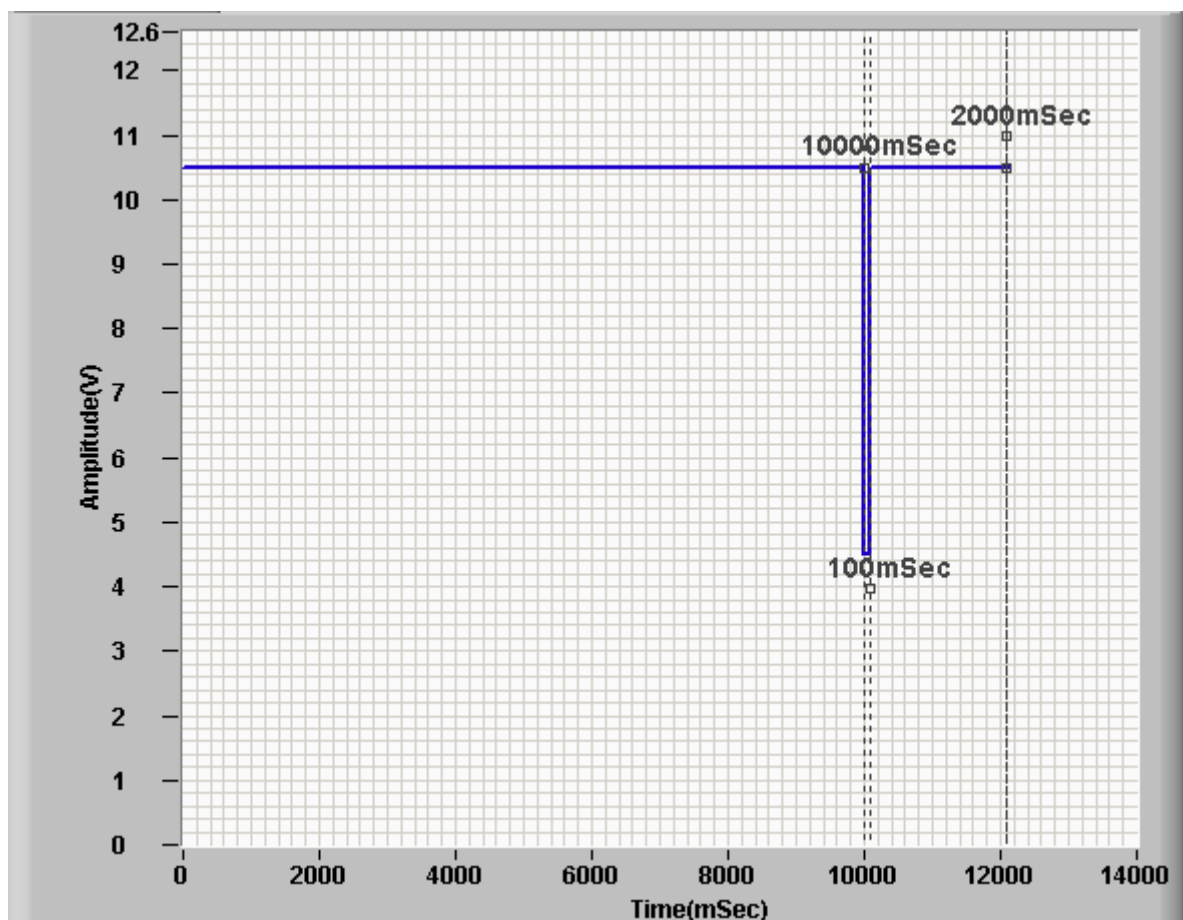


Figure 8-19 Waveform Graph

- Total Time: Same as Starting Profile, the unit is mSec.
- Count Now: Same as Starting Profile.
- Time Count: Same as Starting Profile.
- Notation: Same as Starting Profile.

8.4 Slow Decrease and Increase of Voltage

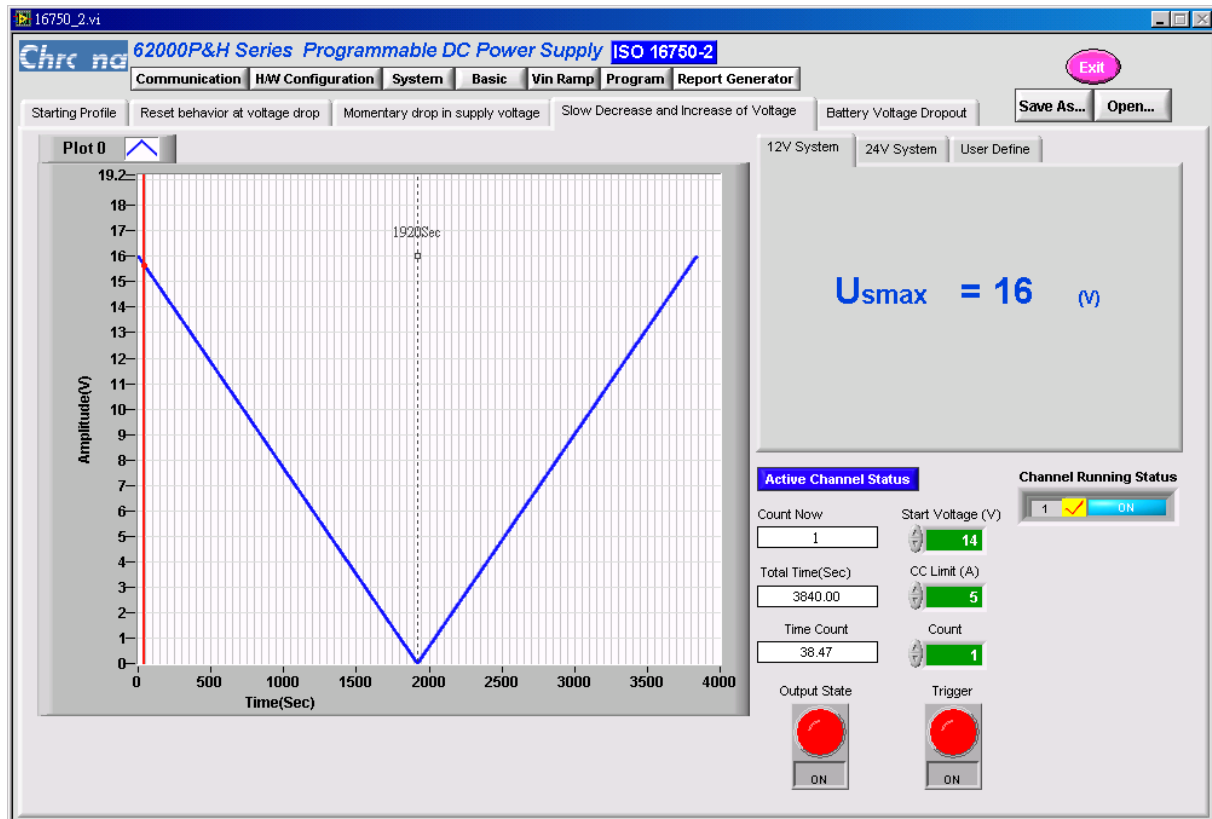


Figure 8-20 Main Screen of Slow Decrease and Increase of Voltage

When in “Slow Decrease and Increase of Voltage” tab page, click one of the System tabs at right and set the current Limit as well as the Count number. Check the notation area to make sure the output has been loaded to the specified current. Click **Trigger** to conduct the test after the confirmation is done.

The time axis on the Waveform Graph that indicates the progress and the count number on “Count Now” as well as the execution time on “Time Count” can be checked during test.

The following describes the setting and display elements.

Description of setting elements: They are System, Count, CC Limit and Trigger on the left side of the screen.

- System Tabs: There are 12V System, 24V System and User Define.

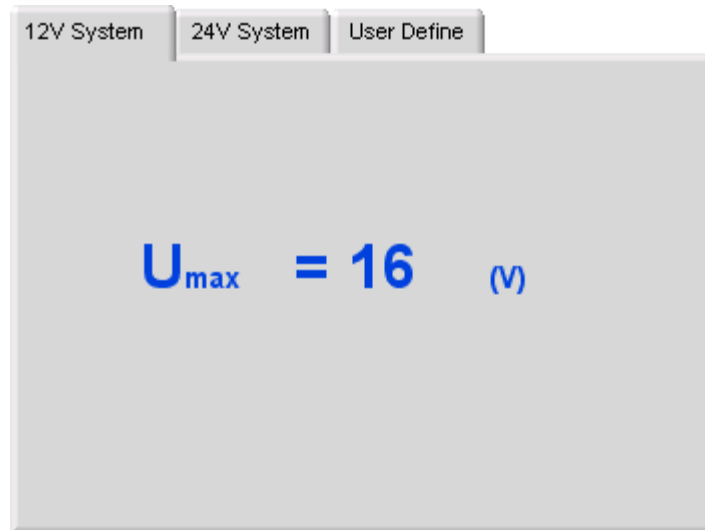


Figure 8-21 System Tabs of Slow Decrease and Increase of Voltage

- **12V System**
Umax is set to 16V.
- **24V System**
Umax is set to 24V.
- **User Define**
The Umax can be set as figure shown below:

Parameter Name	12V system	24V system	User define
Umax	16V	24V	0.5V (default)
1Count Time	3840Sec	5760Sec	0.5 V/min

Table 8-4 Slow Decrease and Increase of Voltage Parameters for Each System

- CC Limit: Same as Starting Profile.
- Count: Same as Starting Profile.
- Trigger: Same as Starting Profile.

The display elements are Waveform Graph, Count Now, Total Time and Time Coun.

- **Waveform Graph:** It simulates the graph based on the voltage and time users set when different conditions are selected. Users can know the output execution timing first. Be aware that the output has to connect to a fixed loading so that the voltage rise rate can be the same as the simulation graph. On the Waveform Graph, an addition red vertical indicator will appear to scan rightward following the time axis when Trigger is on. It can tell the execution time of present count when mapping to the time on X-axis. The pink bold line on Waveform Graph is the simulation of voltage based on the time changes. The voltage change is it drops 0.5V every minute from Umax to 0V and raises 0.5V every minute from 0V to Umax. The vertical dot lines indicate the time Umax changes to 0V based on the voltage set at present. The total time of a Count can also be seen on the X-axis display.

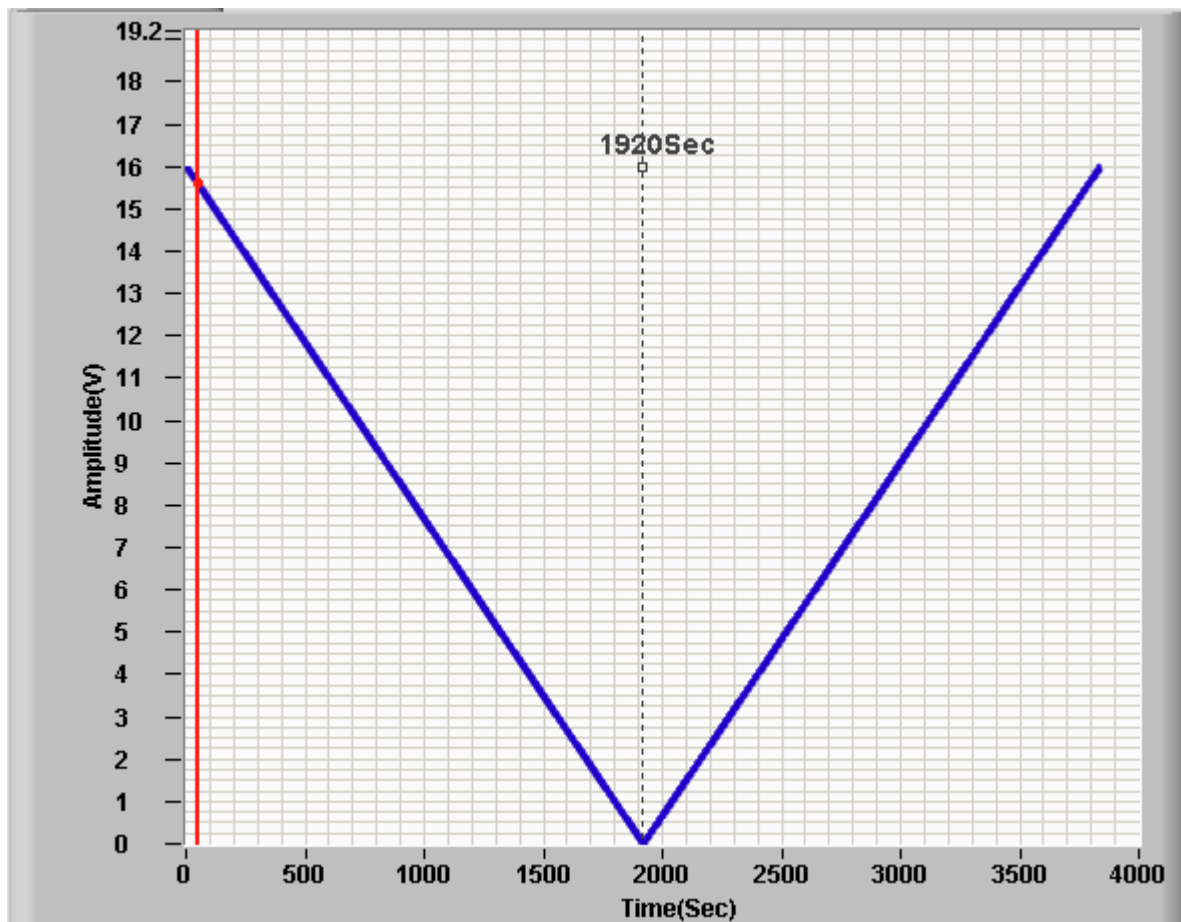


Figure 8-22 Waveform Graph

- Total Time: Same as Starting Profile, the unit is Sec. °
- Count Now: Same as Starting Profile.
- Time Count: Same as Starting Profile.

8.5 Battery Voltage Dropout

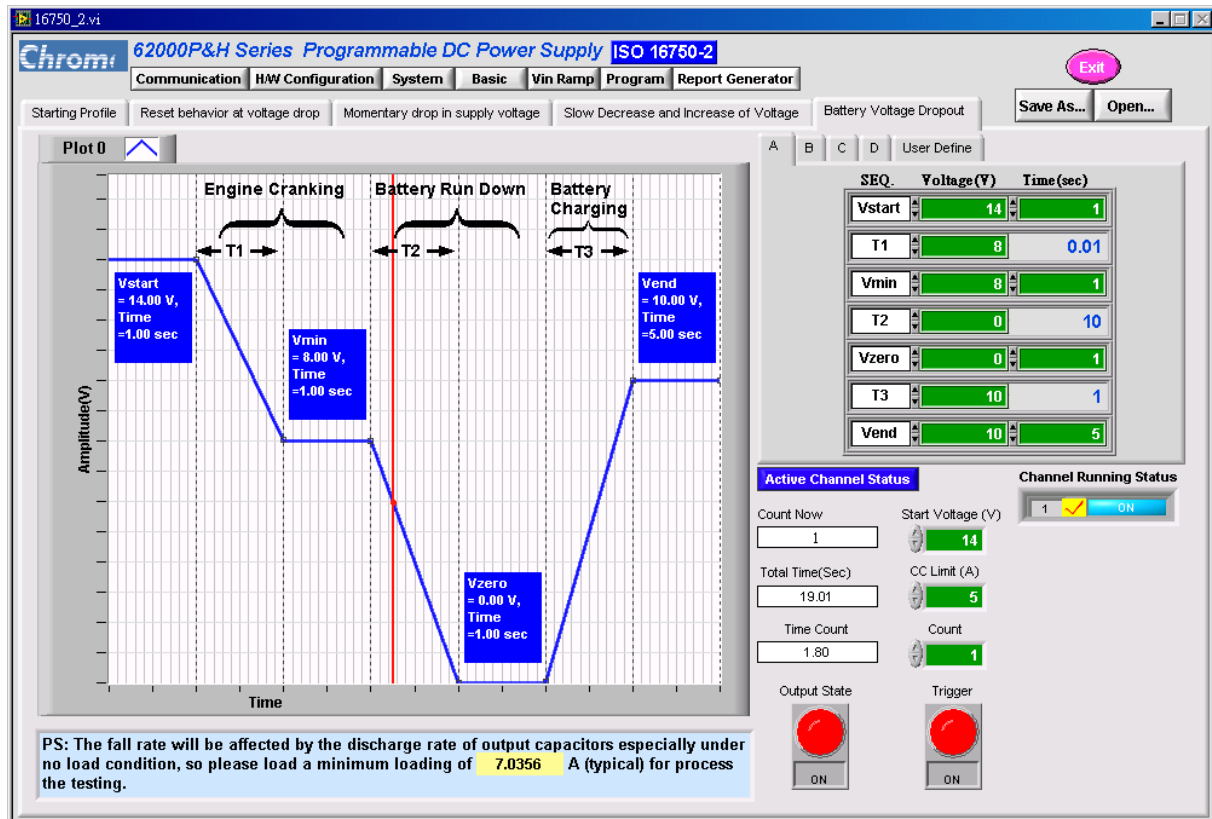


Figure 8-23 Battery Voltage Dropout Main Screen

When in Battery Voltage Dropout tab page, select and set the System parameter tab such as A, B, C and D tabs on the right. The simulation waveform area on the left will update the voltage and time parameters (except T1, T2 and T3 which are regulation times that cannot be set) on the position of related waveform according to user's parameter setting.

The tab page of User Define can set 10 channels of instrument specifications for voltage and the output waveform structured by time sequence. The simulation area on the left draws the simulated output waveform based on the parameters user defined. Users can change appropriate Time Unit for the time axis to draw the simulated output waveform correctly and completely as Figure 8-24 shows.

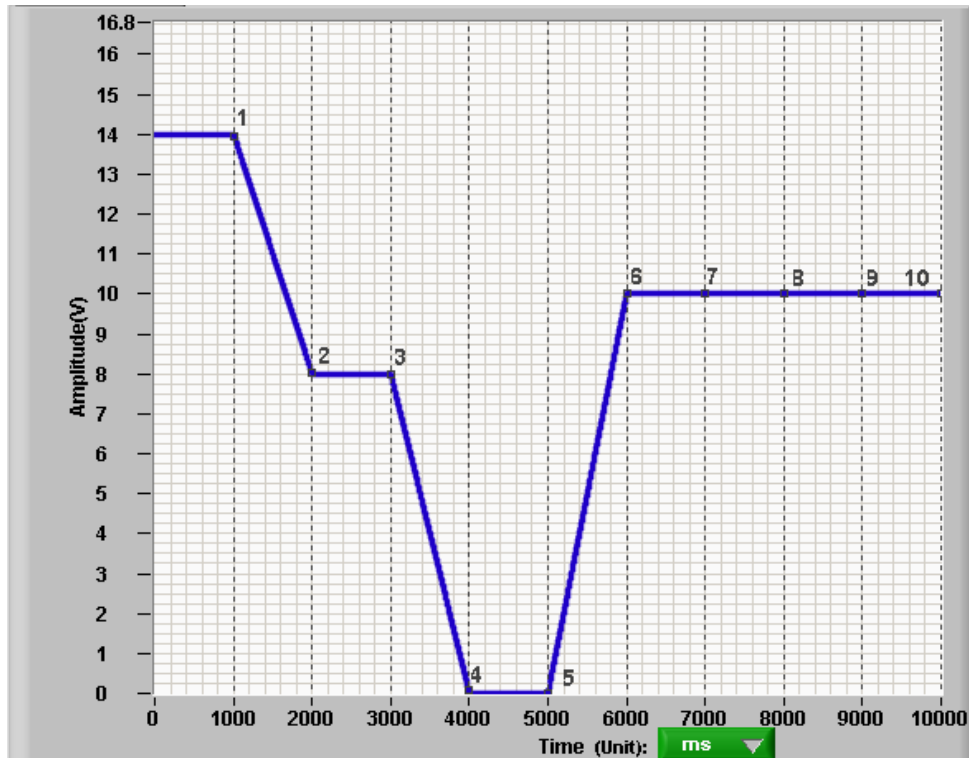


Figure 8-24 Simulated Waveform Display of 10 Program Sequences with User Define Parameters

Set the start voltage, current limit and count for test when the above settings are done, and then press Trigger to conduct the test. The progress of time axis on the Waveform Graph can be observed during test. The Count Now element shows the number of times for execution while the Time Count element indicates the time executed at present.

- Total Time: Same as Starting Profile.
- Count Now: Same as Starting Profile.
- Time Count: Same as Starting Profile.
- Notation: Same as Starting Profile.



CHROMA ATE INC.

致茂電子股份有限公司

66 Hwaya 1st Rd.

Kuei-shan Hwaya Technology Park

Taoyuan County 33383, Taiwan

33383 台灣桃園縣龜山鄉

華亞科技園區華亞一路 66 號

T +886-3-327-9999

F +886-3-327-8898

Mail: info@chromaate.com

<http://www.chromaate.com>