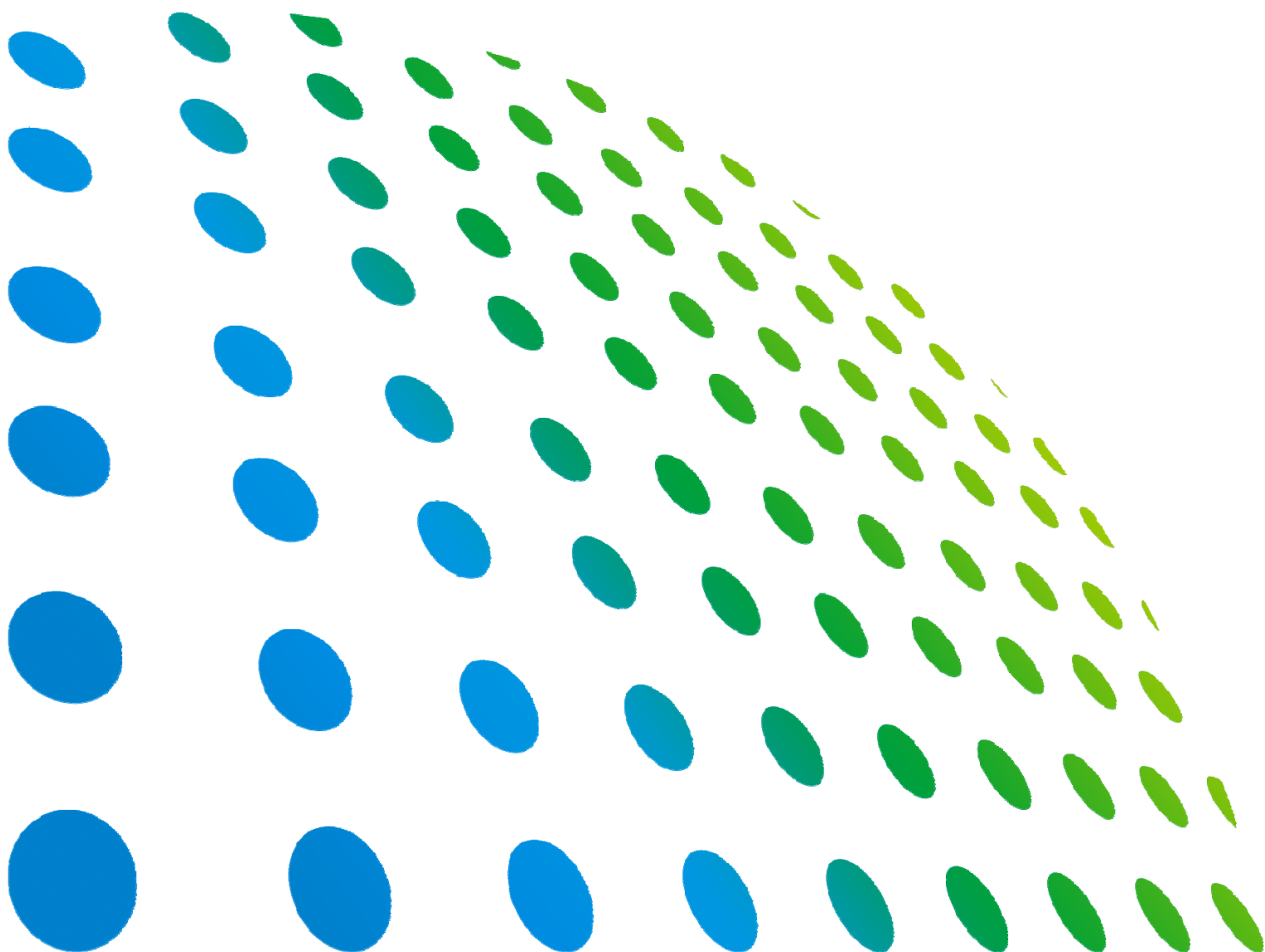




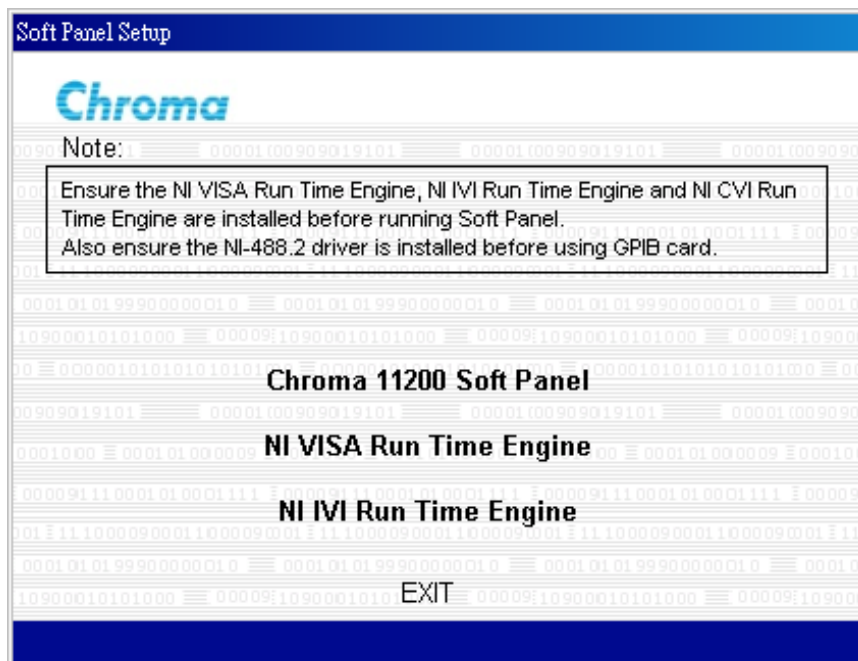
Capacitor Leakage Current /IR Meter

11200

Soft Panel User's Manual



Capacitor Leakage Current / IR Meter 11200 Soft Panel User's Manual



Version 1.2
August 2013

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Revision History

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

Date	Version	Revised Sections
Nov. 2004	1.0	Complete this manual
Jun. 2006	1.1	Modify the following sections: <ul style="list-style-type: none">- "<i>Buttons Description</i>" in the chapter of "<i>LC/IR TEST</i>".- "<i>Buttons Description</i>" in the chapter of "<i>W.V. TEST</i>".
Aug. 2013	1.2	Add the following chapters: <ul style="list-style-type: none">- "<i>C.C. POWER</i>"- "<i>Forward Voltage Test</i>"- "<i>Surge Test</i>" Modify the following: <ul style="list-style-type: none">- "<i>Installing Chroma 11200 LCM Soft Panel</i>" and "<i>Installing the Required NI VISA Driver</i>" sections in the chapter of "<i>Installation</i>"- The main window in "<i>Starting Chroma 11200 Soft Panel</i>", "<i>LC / IR TEST</i>", "<i>NULL TEST</i>" and "<i>W.V. TEST</i>" chapters

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1. System Structure

This chapter explains the structure and functions of Chroma 11200 LCM Soft Panel application. The supported instruments and communication interfaces to PC are listed below for users to identify the required environment easily.

1.1 Introduction

This software is applicable to CHROMA CAPACITOR LEAKAGE CURRENT / IR METER MODEL 11200 only. The remote transmission between PC and AC Source must be active before using the software in order to communicate by commands.

The software application can perform internal parameter settings and monitor the output measurement. Users can turn the withstanding voltage and time (220 dots) data to graphic output using this application for incoming material inspection references. In addition the software is able to save the parameter settings so that users can open an existing file for execution from hard disk easily.

1.2 Supported Hardware

It supports CHROMA CAPACITOR LEAKAGE CURRENT / IR METER MODEL 11200 with firmware version V1.02 or above only.

1.3 Communication Interface

There are two types of communication interfaces between PC and AC Sources:

- a. GPIB
- b. RS232 serial port

1.4 Software and Hardware Requirements

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

- Intel CPU 500MHz or above
- Microsoft Windows 98/2000/XP, VISA 3.0, LabVIEW 7.0 RTE, CVI 7.0 RTE, IVI Compliance Package Version 2.1
- 400 MB hard disk with at least 100 MB or above disk space
- 128MB memory at least
- VGA or SVGA color monitor
- PS2 mouse

2. Installation

Before using Chroma 11200 LCM Soft Panel the drivers GPIB 488.2 1.7 (if GPIB interface is used), VISA 3.0, CVI RTE 7.0 (soft panel installed automatically) and IVI Compliance Package Version 2.1 (soft panel installed automatically) must be installed in the OS. The following sections explain how to install this software to the Windows step by step. First place the Chroma 11200 LCM Soft Panel System Software CD into the CD drive.

2.1 Installing Chroma 11200 LCM Soft Panel

1. Place the CD into the CD drive and the installation begins automatically as Figure 2-1 shows by executing `Setup.exe` program. If it is a download version, please decompress it and click `Setup.exe` to execute manually.

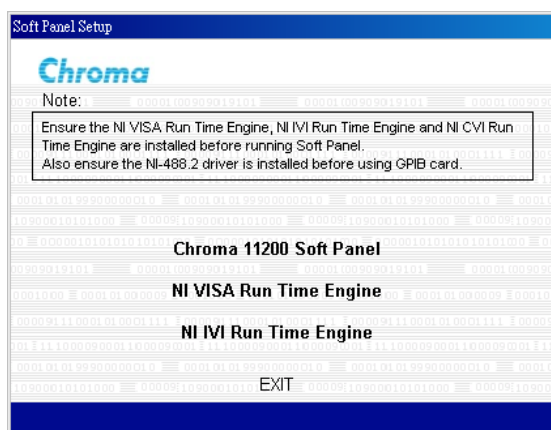


Figure 2-1 Soft Panel Installation Menu

2. Double-click **Chroma 11200 Soft Panel** to enter into the window below and begin the installation.

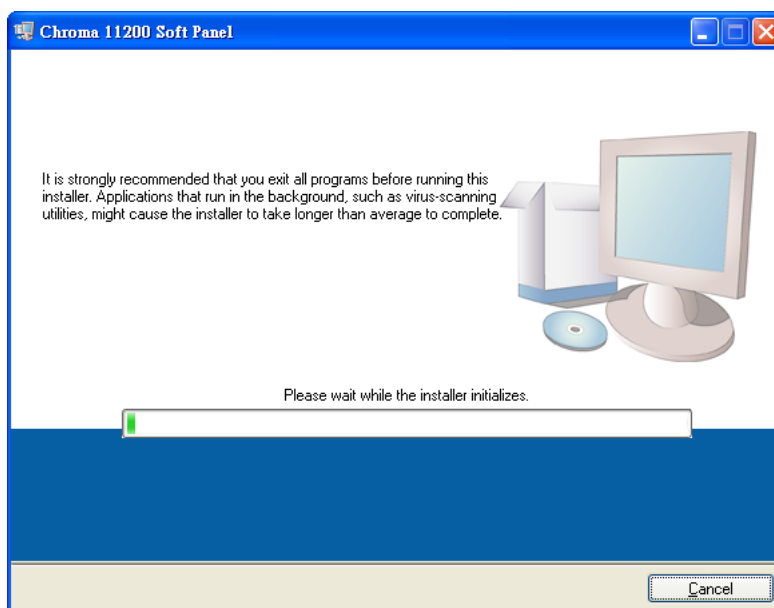


Figure 2-2 Installation Start Window

3. The program is predefined to install in C:\Chroma\Chroma 11200 Soft Panel\ directory. If it is necessary to install it to another directory, click **Browse** to specify the path for installation as Figure 2-3 shows.

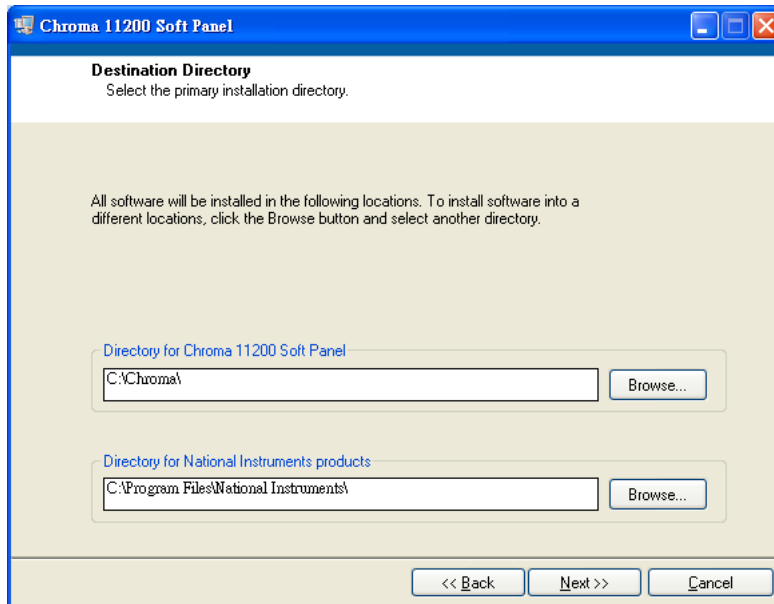


Figure 2-3 Installation Path

4. Click **Next** and follow the prompt message to proceed the installation.
5. At last, the window of successfully installed will appear after the installation is done.

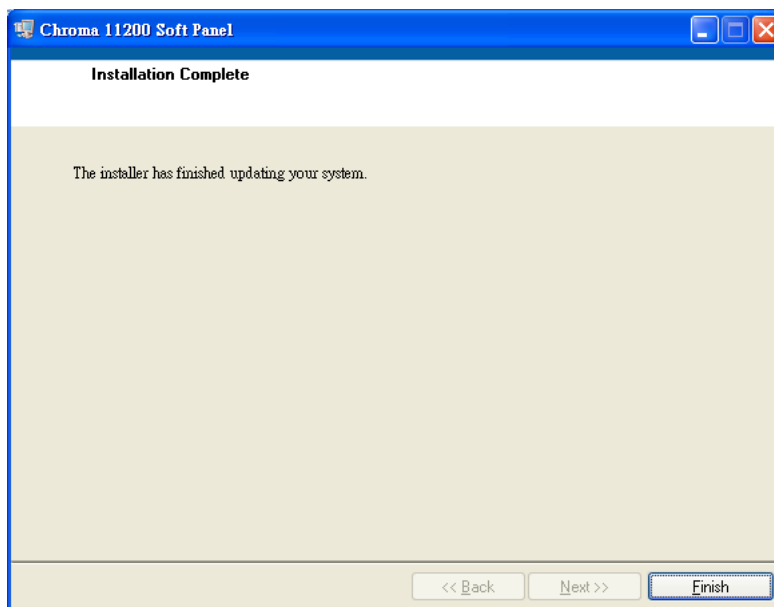


Figure 2-4 Installation Completed

2.2 Installing the Required NI VISA Driver

The NI directory in the Soft Panel installation CD has NI VISA Run Time Engine 3.0 and 4.1 (default installation version) two versions. These two versions have tested by Chroma for feasibility; however, the user can still install the proper VISA version based on the Operating System in use. For more information, please visit the website <http://www.ni.com/support/zht/>. Ignore this section if the NI VISA Run Time Engine driver has been installed.

1. Double-click the **NI VISA Run Time Engine** in Figure 2-1 will prompt the following window to install the NI VISA Run Time Engine driver version 4.1 as Figure 2-5 shows.



Figure 2-5 NI VISA 4.1 Version Installation Main Window

2. It is suggested to end the other executing applications first and click **Next** to start the installation. It will then go to the next step to ask the user for the installation path as Figure 2-6 shows.

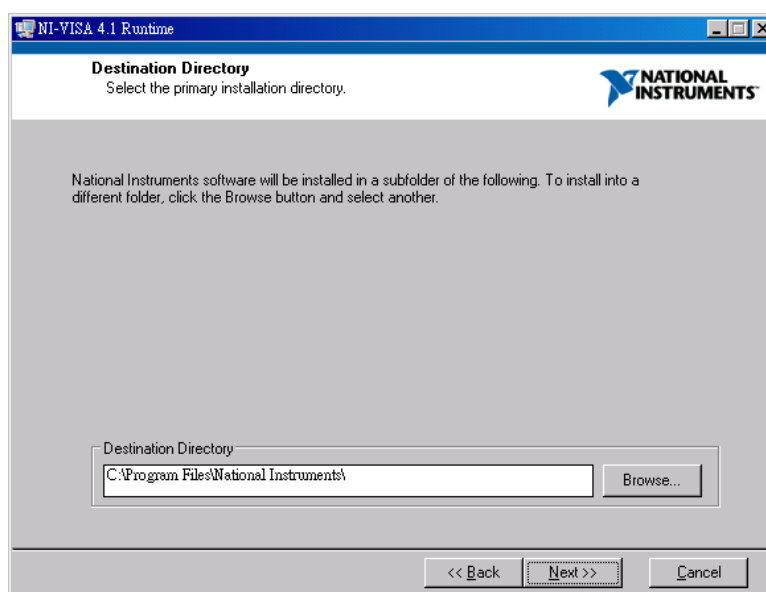


Figure 2-6 Setup for Installation Path

3. Click **Next** following the prompted message for installation. When all the procedures are done, the installation complete is shown as Figure 2-7.

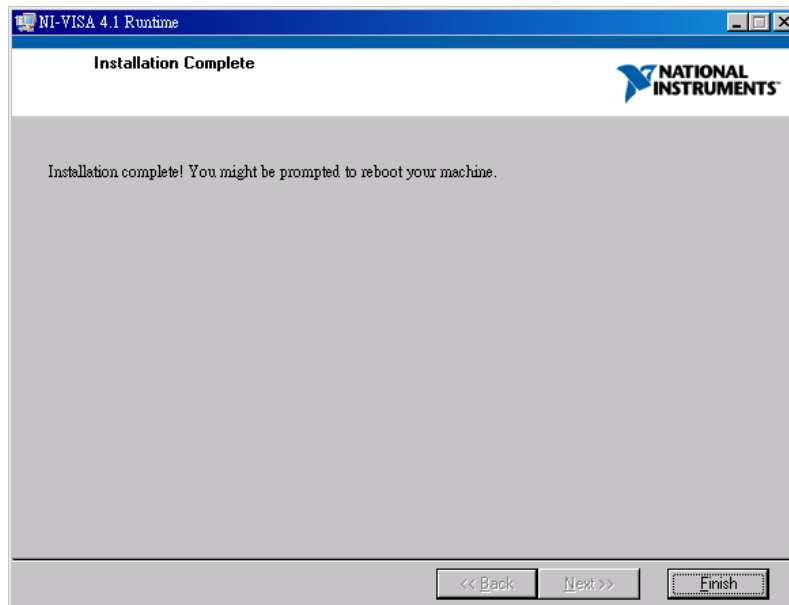


Figure 2-7 NI VISA Installation Complete Window

4. For new OS upgrade, the NI VISA has to be upgraded to support the new OS. Please see the website of <http://www.ni.com/support/zht/> for upgrade and download.
5. When all drivers are installed successfully, click **Start → Programs → Chroma 11200 Soft Panel → Chroma 11200 Soft Panel** to start the application.



Figure 2-8 Start up Chroma 11200 Soft Panel

6. The CD contains the files shown in Figure 2-9 in which the **“Manual”** directory has the user's manuals of both English and Traditional Chinese version in PDF format for selection.

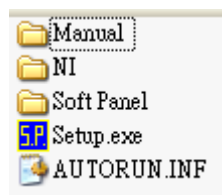


Figure 2-9 Files in CD

2.3 Uninstalling Chroma 11200 Soft Panel

To remove the Chroma 11200 Soft Panel software, it is suggested to click **Start → Settings → Control Panel → Add/Remove Programs** to uninstall the related programs.

3. Starting Chroma 11200 Soft Panel

3.1 Function Description

After the installation is done, click **Start** → **Programs** → **Chroma 11200 Soft Panel** will prompt the window as Figure 3-1 shows. Please enter the serial number listed on the software package and click Log In. It helps customers obtaining their rights for product updates.

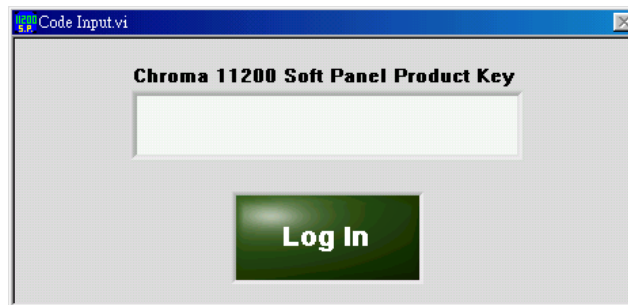


Figure 3-1 Entering the Serial No.

It enters into the setting window for communication parameters.

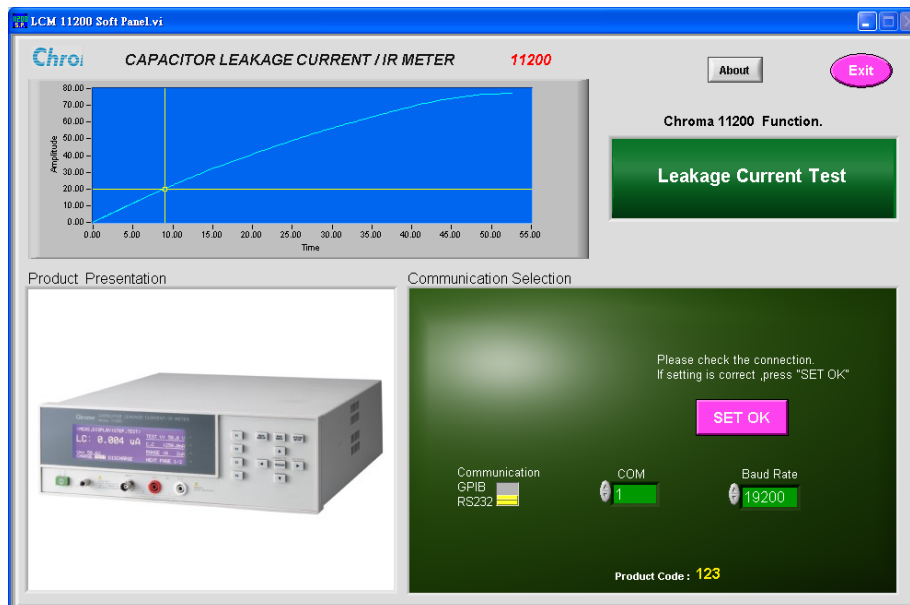


Figure 3-2 Start up Window

Description: The start up window is mainly composed of the following 4 modules.

- Chroma 11200 Functions
- Demo Waveform Window
- Product Presentation
- Communication Selection

- Chroma 11200 Functions: There are Leakage Current Test, Isolated Resistance Test and W.V. Test.
- Demo Waveform Window: It displays the mapped AC Source output waveform according to the function.
- Product Presentation: It shows the device outline.
- Communication Selection: It sets the communication protocol of PC and AC Source. Chroma 11200 Soft Panel provides the communication protocols of GPIB and RS232 as Figure 3-3 shows. When selecting GPIB as the communicating protocol there must have a GPIB card in PC.

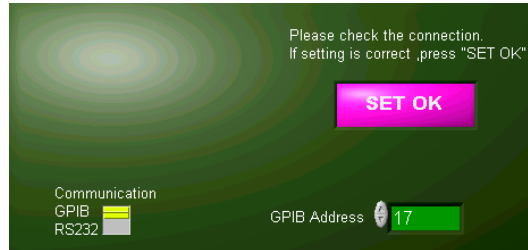


Figure 3-3 Communication Selection

3.2 Buttons Description

- When the communication protocol is confirmed, click **SET OK** as Figure 3-4 shows on the Soft Panel to enter into next window (the default is LC/IR TEST window).



Figure 3-4 Set OK Button

- GPIB Address: Set the correct GPIB Address as Figure 3-5 shows.



Figure 3-5 Set GPIB Address

- Click this button to exit the program completely.



Figure 3-6 Program Exit Button

- Click this button to show the information of soft panel version.



Figure 3-7 Soft Panel Version Information

4. LC / IR TEST

4.1 Function Description

Enter the LC / IR TEST window as Figure 4-1 shows from the Start window.



Figure 4-1 LC / IR TEST Function Panel – Main Window

- Be noted if the LC/IR Meter is connected when entering into the main window. If the hardware is connected, the Firmware Version number will appear as Figure 4-2 shows. Ex. #COM# Chroma,11200,LLLLLLLLLLLL,01.01, where #COM# indicates the communication is via RS232.

#COM# Chroma,11200,
LLLLLLLLLLLL,01.01

Figure 4-2 Firmware Version

- If the hardware is not connected, the message Connection Error!! will prompt behind the F/W Version as Figure 4-3 shows.

Connection Error !!

Figure 4-3 Connection Error Appears When No Instrument is Connected

- When error appears please check the communication interface or if its setting parameters are correct. If any mistake is found, click **Reset** to return to the Start up window as showed in Figure 3-1 for setting.
- The test state Charge/Test/Discharge is displayed. The measurement varies with the LC or IR selected by user. In LC mode, the measurement readings are Measure Testing Voltage (V) and L.C. (uA); while in IR mode, the measurement reading is the value of IR (Ohm). The readings report can be exported in Excel format.

- The specification settings are also different for LC and IR. The high and low limit of leakage current can be set in LC mode; while the high and low limit of insulation resistance can be set in IR mode.
- At last the measured readings will compare with the specification and show PASS/ >>High Limit /<Low Limit.

4.2 Buttons Description

Below explains the function of each button.

- Reset: It returns to the Figure 3-1 Start up window for communication parameters setting and performing initialization.
- Store: It saves the important parameters into a file named with the extension of .lcm as Figure 4-4 shows.

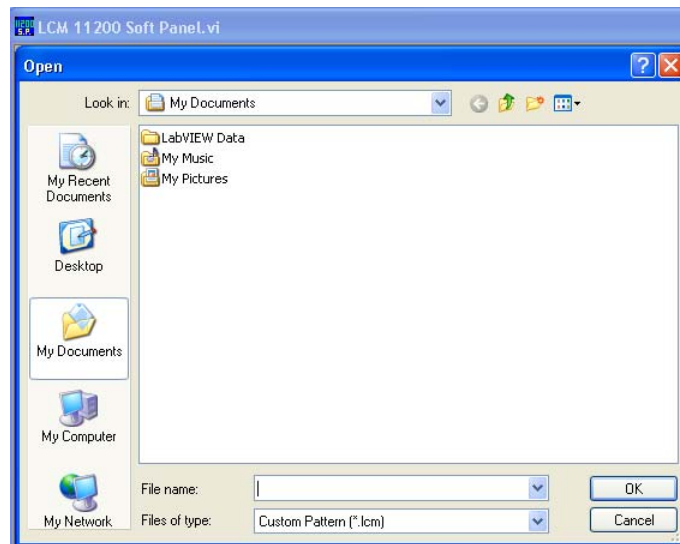


Figure 4-4 Dialog Box for Storing a File

- Recall: It calls the Soft Panel parameter file with the extension of .lcm as Figure 4-5 shows.

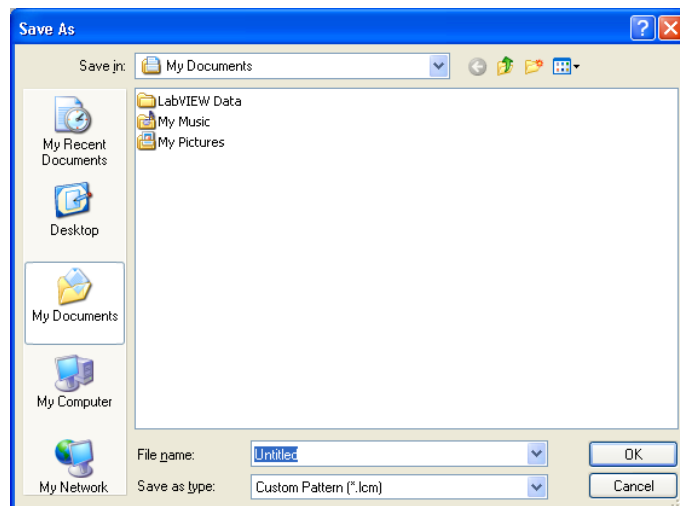


Figure 4-5 Dialog Box for Opening a File

- Exit: It quits the program. If the parameters are changed, a message will prompt to ask users if the file will be saved and then confirm for exit as Figure 4-6, Figure 4-7 shows.

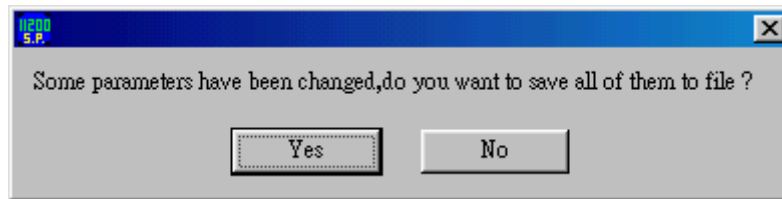


Figure 4-6 Message for Parameter Changes

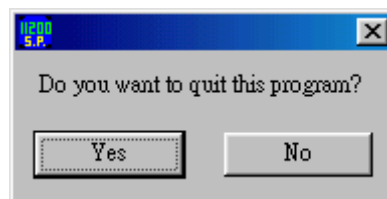


Figure 4-7 Confirmation for Exiting the Program

- Test Parameter: It switches the IR /LC test mode. It will switch to correct comparator contents and reading types automatically and prompt a warning message to clear the old readings when changing the test mode as Figure 4-8 shows.

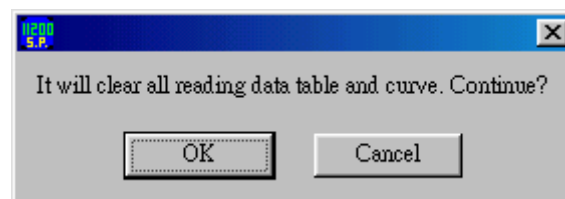



Figure 4-8 Warning Message for Cleaning the Old Readings

- Test Mode: It switches the SEQ, STEP test mode. Once the test parameters are set in SEQ mode, click the trigger button one time the test is executing automatically. STEP test mode performs single action, thus the instrument measures once when the trigger button is clicked.
- Test Speed: It switches the measurement speed. The measurement is more stable with lower speed. It will affect the minimum value of INT TRIG TIMER in STEP test mode.
- Measure Range: It switches the measurement range. There are Auto, 20mA, 2mA, 200uA, 20uA and 2uA 6 ranges in total.
- INT TRIG: It is the switch of internal auto trigger mode and supports STEP test mode only.
- INT Trig Timer (S): It sets the time interval for internal auto trigger mode in the unit of second. There are different minimum limits for measurement speed fast, medium and slow as well as the communication interface. The communication interface of RS232 is 1.4, 1.5 and 3.0 seconds while the GPIB interface is 1.6, 1.8 and 3.3 seconds. The maximum is 10000 seconds. It is valid for STEP test mode only.
- INT Counter: It sets the times for internal auto trigger. It stops trigger when done and enters into discharge state. It can be operated and displayed in STEP test mode only.
- Charge Time Mode: It sets the counting mode for charge time and there are $V_m=V_s$ and $V_m=0V$ two types. In leakage current test, it needs to count the CHARGE TIME following JIS (Japanese Industrial Standards) standard that is the count starts only when the UUT is charged to the rated operation voltage. Therefore choosing the option $V_m=V_s$ can comply with JIS standard while choosing $V_m=0V$ can count the charge time

immediately when the test begins. It can be operated and displayed in SEQ test mode only.

- Test Volt(V): It sets the test voltage. The ranges are 650V Model: 1~ 650 volt, 800V Model: 1~ 800 volt. and 1000V Model: 1~ 1000 volt.
- Test Current(mA): It sets the charge current. The ranges are:
650V Model: The range is 0.5~500mA and when the test voltage Vf is larger than 100V, the range changes to 0.5~150mA automatically.
800V & 1000V Models: When the test voltage Vf is smaller than or equal to 100V the range is 0.5~ 500 milliampere, and when it is larger than 100V the range is 0.5~ 50 milliampere.
- Charge Time: It sets the charge time within the range of 0 ~ 999 seconds. It supports SEQ test mode only.
- Dwell Time: It sets the test time within the range of 0.2 ~ 999 seconds. It supports SEQ test mode only.
- File Path \ Filename: Working with  button, it sets the path and filename for the file converted to Excel format.
- Include Curve Picture: It sets if to include the reading curve in Excel file.
- File Operation: It sets the readings to convert to Excel file or print to default printer without saving.
- Print Out: It sets the data to output to a file or default printer.
- TRIG / TEST: It is the trigger button, where the left LED shows the state. It can control the trigger of output voltage and current charge state for the unit. The trigger mode is divided into serious trigger and single step trigger depending on the test mode (SEQ/STEP).
- Discharge: It stops triggering and enters into discharge state.
- Upper State: It sets the upper comparator On/Off state.
- Lower State: It sets the lower comparator On/Off state.
- Value of limit: It sets the upper/lower comparator value, where the upper limit cannot equal to or be smaller than the lower limit. A message as Figure 4-9 shows will prompt when it happens.

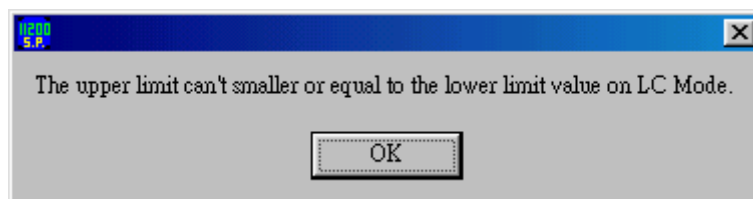




Figure 4-9 Message for Incorrect Upper Limit

- Unit: It sets the unit of upper/lower comparator value.
- Comparator State: It sets if showing the comparison result.

Following explain the types of readings:

- Simulation Output Window: The main function of this window is to turn the measured readings in LC/ IR test mode accordingly into graph for changes observation with the magnifier and movement buttons . The curve data is updated after accumulated 10000 entries of data as Figure 4-10 shows. The first reading begins to draw curve from the horizontal coordinate 1 (Start = 1). Click  can set the attributes of pattern, thickness, color, etc for curve as Figure 4-10 shows.

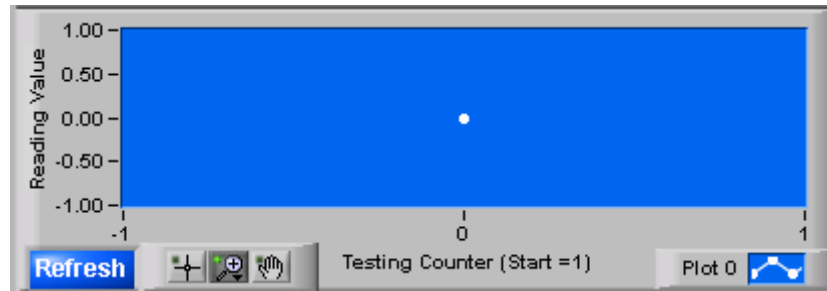


Figure 4-10 Simulation Output Window

- Measure Testing Volt (V): It shows the voltage readings immediately after Trig On.
- Measure IR (Kohm): It shows the real time insulation resistance readings in IR test mode after Trig On.
- Measure LC (mA): It shows the real time capacitor leakage current readings in LC test mode after Trig On.
- Test State Display: It shows the test state of the device at present. There are Charging Testing and Discharging states; and any setting of time delayed percentage for Charging and Testing is shown by the Run Bar.
- Comparator Result Output: It shows the real time comparator results of readings after Trig On. There are PASS, >UPPER LIMIT, <LOWER LIMIT and COMPARE (initial state).

5. NULL TEST

5.1 Function Description

The NULL TEST also called Open Test as Figure 5-1 shows is a test to calculate the device internal calibration value without connecting a UUT to the test circuits.

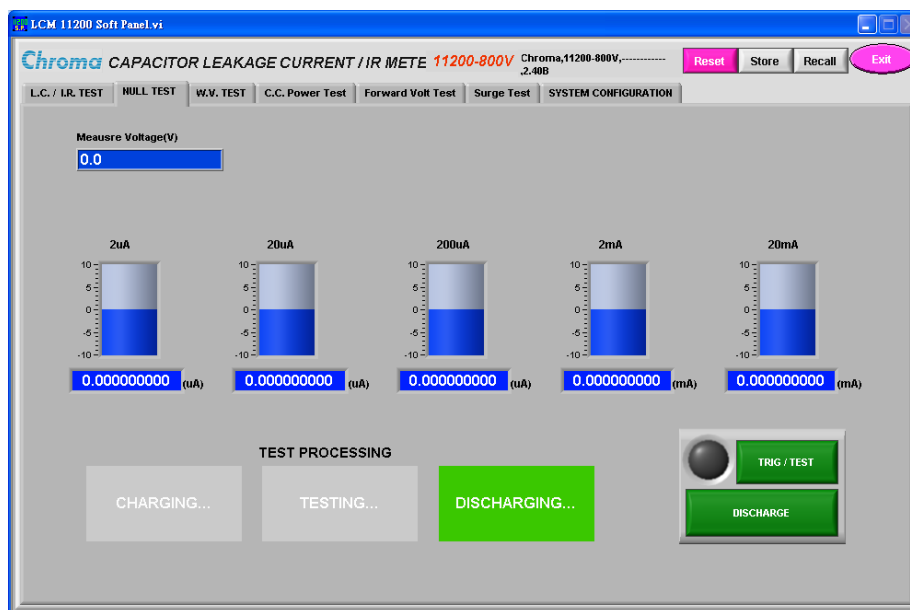


Figure 5-1 NULL TEST Window

5.2 Buttons Description

- TRIG / TEST: It is the trigger button, where the left LED shows the state. It controls the trigger of output voltage and current charge state for the unit. The test stops automatically after triggered and enters into discharge state. Before triggering the unit, a message as Figure 5-2 shows will prompt to remind users to remove the UUT first.

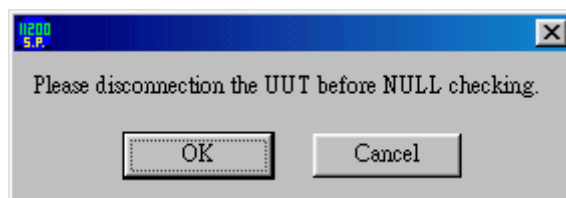


Figure 5-2 Message for Removing the UUT

- Discharge: It stops triggering and enters into discharge state.
- The ranges in different units - 2uA, 20uA, 200uA, 2mA and 20mA show the calibration value after finishing the NULL.
- Measure Voltage (V): It shows the output voltage when performing calibration.
- Test Processing: It shows the test progress of charging, testing and discharging.

6. W.V. TEST

6.1 Function Description

In this test it measures the withstanding voltage (V_f) using the user-defined data to draw the withstanding voltage waveform. Once the entire Trig test is done, it will read T_r (the rise time when the measured voltage reaches 90% of test voltage), V_t (the test time reaches T_r and the UUT terminal voltage after Dwell Time), and display the total test time as well as UUT test voltages and etc. as Figure 6-1 shows.




Figure 6-1 W.V. TEST Window

6.2 Buttons Description

Below explains the function of each button.


- V_f (V): It sets the withstanding voltage level in volt. The range for 650V Model: 1~ 650 volt., 800V Model: 1~ 800 volt. and 1000V Model: 1~ 1000 volt.
- C.C. (mA): It sets the test charging current in milliamperere for test. For 650V Model: the range is 0.5~ 150 milliamperere. For 800V & 1000V Model: when the test voltage V_f is smaller than or equal to 100V the range is 0.5~ 150 milliamperere and when it is larger than 100V the range is 0.5~ 50 milliamperere.
- CHG Tend: It sets the maximum charging time in the range of 5 ~ 600 seconds.
- Tend (S): It sets the measurement time in the range of 30 ~ 600 seconds.
- Start Point, End Point: When the withstand voltage test is done 220 entries of readings will be created and these two parameters can be set to read among the entries as the start and end point of curve for the withstand voltage test. The setting range is 1 ~ 220 and the start point must be smaller than the end point.
- TRIG / TEST: It is the trigger button, where the left LED shows the state. It controls the trigger of output voltage and current charge state for the unit. The device is in charge state when the test is triggered and stops automatically after it is done. Then it enters


- into discharge state.
- Discharge: It stops triggering and enters into discharge state.
- File Path \ Filename: Working with  button, it sets the filename for the file converted to Excel format.
- Include Curve Picture: It sets if to include the curve picture of the withstanding voltage readings in the Excel file.
- File Operation: It sets the readings to convert to Excel file or print to default printer without saving.
- Print Out: It sets the data to output to a file or default printer.

Following explain the types of readings:

- Waveform Simulation Area: It shows the withstanding voltage waveform after the Trig test that based on the user-defined data is done. If users clicked Discharge during Trig test, the withstanding voltage waveform will not be created instead a message “Trig to interruption” will appear.

- : It clears the graph.

- : It sets if to enable specific cursors on the output curve, for instance 90%Vf coordinate and the coordinate of Max, Min (the minimum of curve after Max.) and etc. as Figure 6-2 shows. Users can use the magnifier and movement buttons

 to observe the changes of readings.

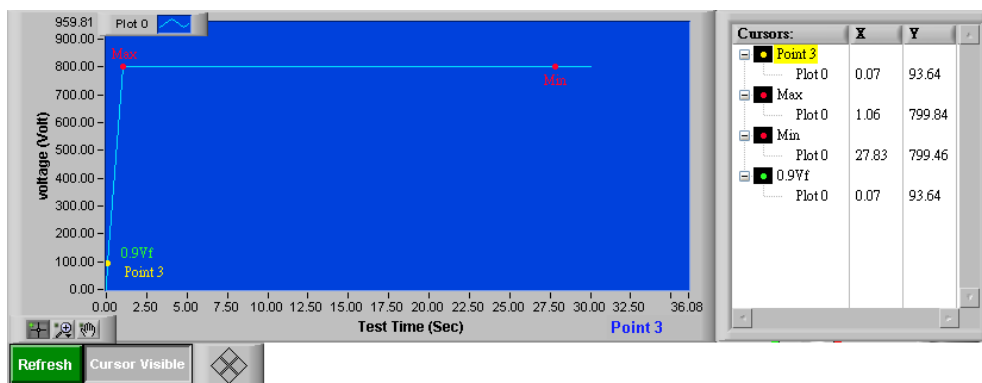


Figure 6-2 Waveform of Withstanding Voltage

- Vm (V): It shows the real time voltage measurement in from charging, testing to discharging.
- Tr (S): It shows the rise time in second when the measured voltage reaches 90% Vf.
- Vt (V): It shows the measured voltage when the test time reaches Tr+Tend.
- Total Testing Time (S): It shows the total test time in second.
- Curve Max. Value (V): It shows the curve max. value in volt. after the withstanding voltage curve reaches 90% Vf.
- Curve Min. Value (V): It shows the curve min. value in volt. after the withstanding voltage curve.
- Test Processing: It shows the test progress of charging, testing and discharging with the Run Bar to indicate the percentage.

7. C.C. POWER

7.1 Function Description

It follows the repeat loop set to charge/discharge the DUT several times. It tests in LC/IR mode and measures the leakage current and insulation resistance as Figure 7-1 shows. It will

enter into CHARGE mode when **TRIG / TEST** is clicked and the meter will begin to output based on the set voltage, current limit and output duration. Same as the common POWER SUPPLY, CC MODE appears on the window when in the mode and disappears when in CV MODE. To end the output, click **DISCHARGE** to enter into DISCHARGE mode.

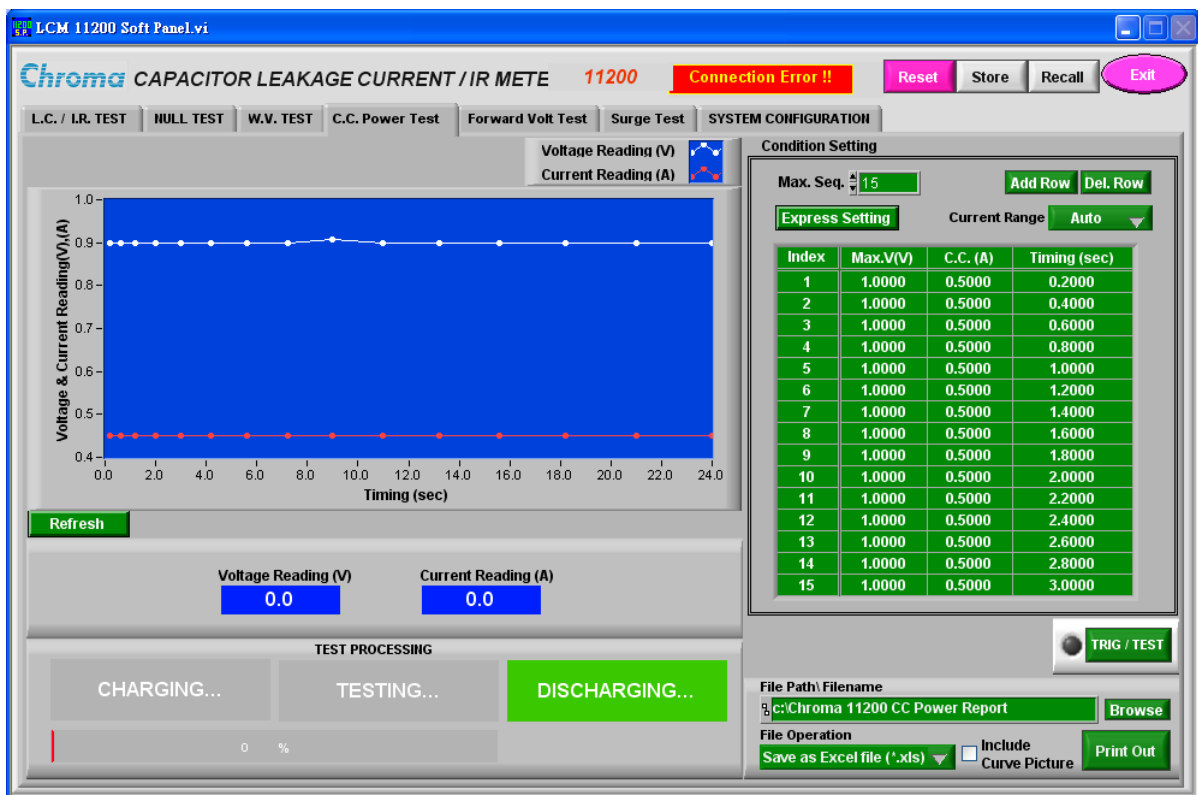


Figure 7-1 C.C. POWER Test Window

7.2 Buttons Description

- Max. Seq.** (1000): It sets the maximum sequence for execution. The range is 1 ~ 1000.
- Insert Row**: It inserts a new sequence at where the cursor stops.
- Del. Row**: It deletes a sequence at where the cursor stops.
- Max.V(V)**: It sets the maximum output voltage. 1V~650V for model 650V and 1V~800V for model 800V.

5. **C.C. (mA)**: It sets the value of constant current. The range is 0.5mA~500.0mA.
For model 650V, when TEST V > 100V, the C.C. maximum is 150mA.
For model 800V, when TEST V > 100V, the C.C. maximum is 50mA.
6. Timing: It sets the output time of combined sequence. The range is 0 ~ 3600 seconds.

Express Setting:

As the maximum setting is up to 1000 sequences, Express Setting as Figure 7-2 shows can help the user to set the test sequences with particular ratio in the sequence table.

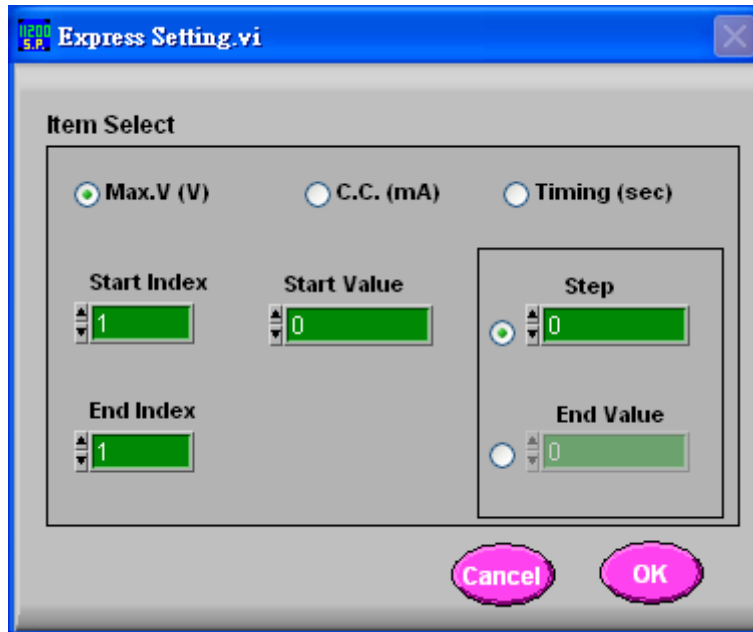


Figure 7-2 Express Setting Window

1. Max. V, C.C. & Timing: It selects the parameter type for express setting. Only one item can be selected at a time.
2. Start Index, End Index: It sets the Index for express setting. The range is 1 ~ 1000.
3. Start Value: It sets the start value.
4. End Value & Step Value: Either End Value or Step Value can be selected to increase or decrease the value. Based on the logic relation of combined sequences, the parameters are inputted automatically in the sequence table.

5. **Current Range** **Auto**: It sets the constant current range which has 2uA, 20uA, 200uA, 2mA, 20mA and Auto for selection.

6. **Refresh**: It clears the curve.

7. **Total Test Time**: **hour** 0 **min** 0 **sec** 0: It follows the sequence table to calculate the test time required automatically for display. The time format is hour, minute, second.

8. **TRIG / TEST**: It is the button to start output voltage.

9. **Voltage Reading (V)** 0.0: When the output voltage is Trig On, it shows the output voltage reading in the unit of Volt.

Current Reading (A)

0.0

10. : When the output voltage is Trig On, it shows the output current reading in the unit of ampere.

60 %

11. Run Bar: It shows the percentage of the progress at present.

*For the functions of other related buttons, please see Chapter 4 for detail information.

8. Forward Voltage Test

8.1 Function Description

It performs forward voltage test on the diode or the DUT following the index sequence combined with multiple parameters to get the curve of forward breakdown voltage. When COMPARE is ON, the system will compare the measured forward voltage with the UPPER & LOWER set for VF. The screen shows PASS if it is not over. The result screen shows >HIGH if the value exceeds the upper limit and shows <LOW if the value is under LOWER as Figure 8-1 shows.

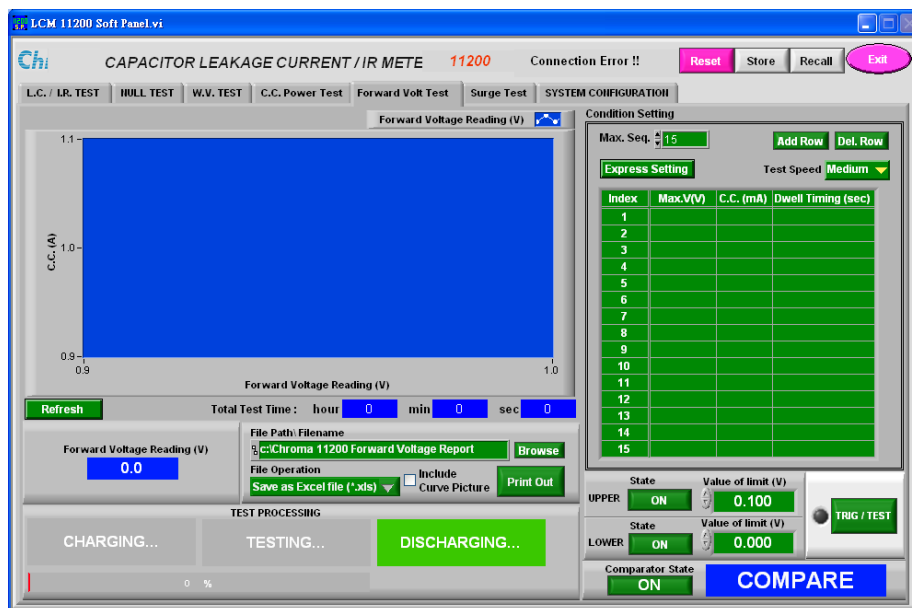


Figure 8-1 Diode Forward Voltage Test Window

8.2 Buttons Description

1. **Max. Seq.** : It sets the maximum sequence for execution. The range is 1 ~ 1000.
2. **Insert Row**: It inserts a new sequence at where the cursor stops.
3. **Del. Row**: It deletes a sequence at where the cursor stops.
4. **Max.V(V)**: It sets the maximum output voltage. 1V~650V for model 650V and 1V~800V for model 800V.
5. **C.C. (mA)**: It sets the value of constant current. The range is 0.5mA~500.0mA. For model 650V, when TEST V > 100V, the C.C. maximum is 150mA. For model 800V, when TEST V > 100V, the C.C. maximum is 50mA.
6. **Dwell Timing (sec)**: It sets the output time for combined sequence. The range is 0.2 ~ 999.9 seconds.

Express Setting:

As the maximum setting is up to 1000 sequences, Express Setting as Figure 8-2 shows can help the user to set the test sequences with particular ratio in the sequence table.

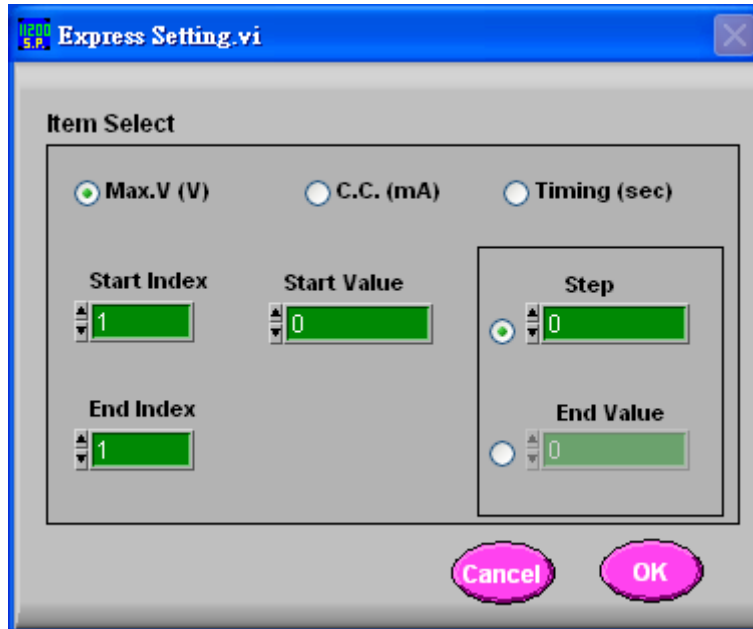


Figure 8-2 Express Setting Window

1. Max. V, C.C. & Timing: It selects the parameter type for express setting. Only one item can be selected at a time.
2. Start Index, End Index: It sets the Index for express setting. The range is 1 ~ 1000.
3. Start Value: It sets the start value.
4. End Value & Step Value: Either End Value or Step Value can be selected to increase or decrease the value. Based on the logic relation of combined sequences, the parameters are inputted automatically in the sequence table.

5. **Test Speed Medium** (dropdown): It sets the measurement speed to FAST, MEDIUM and SLOW range.


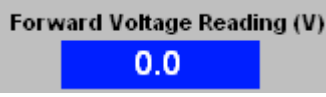
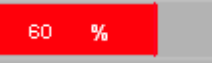
6. **Refresh** (button): It clears the curve.

7. **Total Test Time: hour 0 min 0 sec 0** (display): It follows the sequence table to calculate the test time required automatically for display. The time format is hour, minute, second.

8. **UPPER State ON Value of limit (V) 0.100** (display): It sets the reading comparator to ON or OFF and the upper limit which has to be larger than or equal to the lower limit.

9. **LOWER State ON Value of limit (V) 0.000** (display): It sets the reading comparator to ON or OFF and the lower limit.

10. **Comparator State ON COMPARE** (display): It sets the Comparator State to ON or OFF. If ON, it will show the result when the test is done. The results include PASS, >UPPER LIMIT, <LOWER LIMIT and COMPARE (initial state).

11.  : It is the button to start output voltage.
12.  : When the output voltage is Trig On, it will display the FORWARD VOLTAGE reading in real time. The unit is volt.
13.  Run Bar: It shows the percentage of the progress at present.

*For the functions of other related buttons, please see Chapter 4 for detail information.

9. Surge Test

9.1 Function Description

It measures the DUT's leakage current or insulation resistance after the repeat loop charged/discharged the DUT, and based on the upper/lower limit to judge the reading as Figure 9-1 shows.

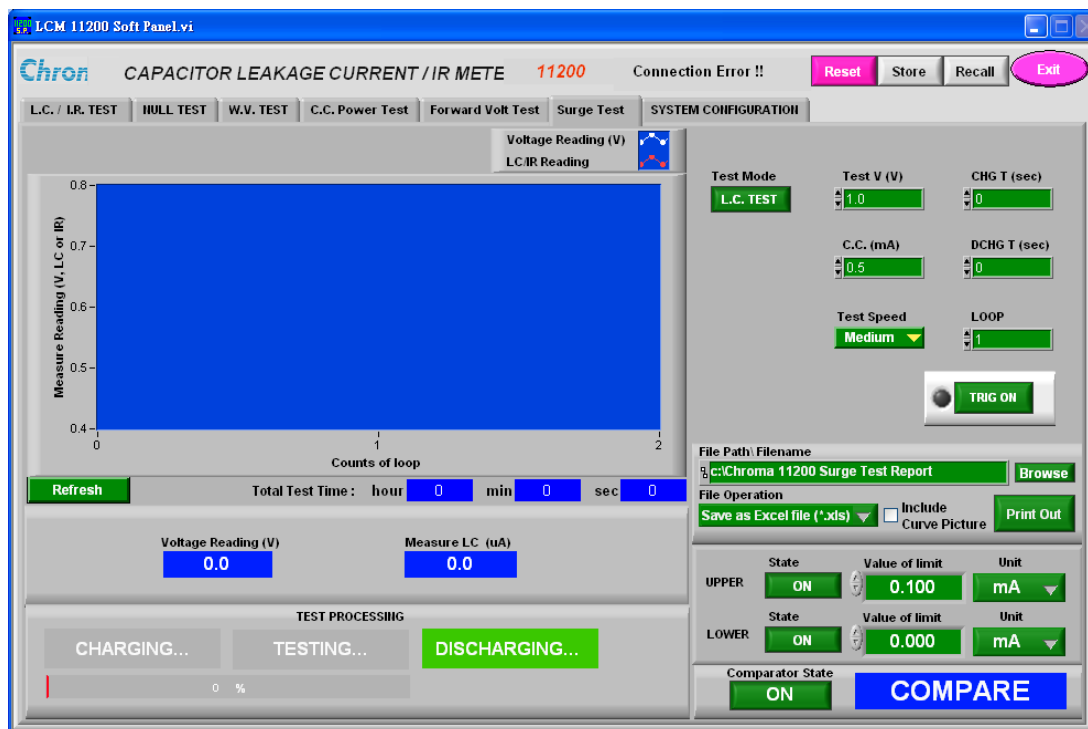
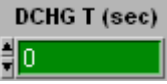




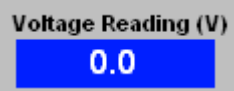
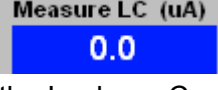



Figure 9-1 SURGE TEST Window

9.2 Buttons Description

1. **L.C. TEST**: It switches to Leakage Current (LC) or Insulation Resistance (IR) mode.
2. **Test V (V)**: It sets the test voltage. The range is 650V: 1V~650V, 800V: 1V~800V.
3. **C.C. (mA)**: It sets the charge current limit. The range is 0.5mA~500.0mA.
4. **Test Speed**: It sets the measurement speed. The ranges are FAST, MEDIUM and SLOW.
5. **CHG T (sec)**: It sets the DUT charge time. The range is 0 ~ 999 seconds. When within the time of CHG T, the test will stop if the capacitor does not charge to the voltage set in TEST V.

6.  : It sets the DUT discharge time. The range is 0 ~ 999 seconds. When within the time of DCHG T, the test will stop if the capacitor does not discharge to the voltage set in Discharge Volt.
7.  : It sets the number of loop. The range is 1 ~ 9999.
8.  : It sets the upper comparator to ON or OFF and the value limit which has to be larger or equal to the lower limit as well as the unit (uA & mA for LC mode and Kohm \ Mohm \ Gohm for IR mode.)
9.  : It sets the lower comparator to ON or OFF and the value limit which has to be smaller than or equal to upper limit as well as the unit (uA & mA for LC mode and Kohm \ Mohm \ Gohm for IR mode.)
10.  : It sets the Comparator State to ON or OFF. If ON, it will show the result when the test is done. The results include PASS, >UPPER LIMIT, <LOWER LIMIT, COMPARE (initial state), Fetch Error, ContChk Fail, Stop by user.
11.  : It shows the voltage readings at present.
12.  : It shows the current or insulation resistance value at present based on the Leakage Current (LC) or Insulation Resistance (IR) measurement mode.
13.  Run Bar: It shows the percentage of the progress at present.

*For the functions of other related buttons, please see Chapter 4 for detail information.

10. System Configuration

10.1 Function Description

In SYSTEM CONFIGURATION it sets the common parameters of the device as Figure10-1 shows.

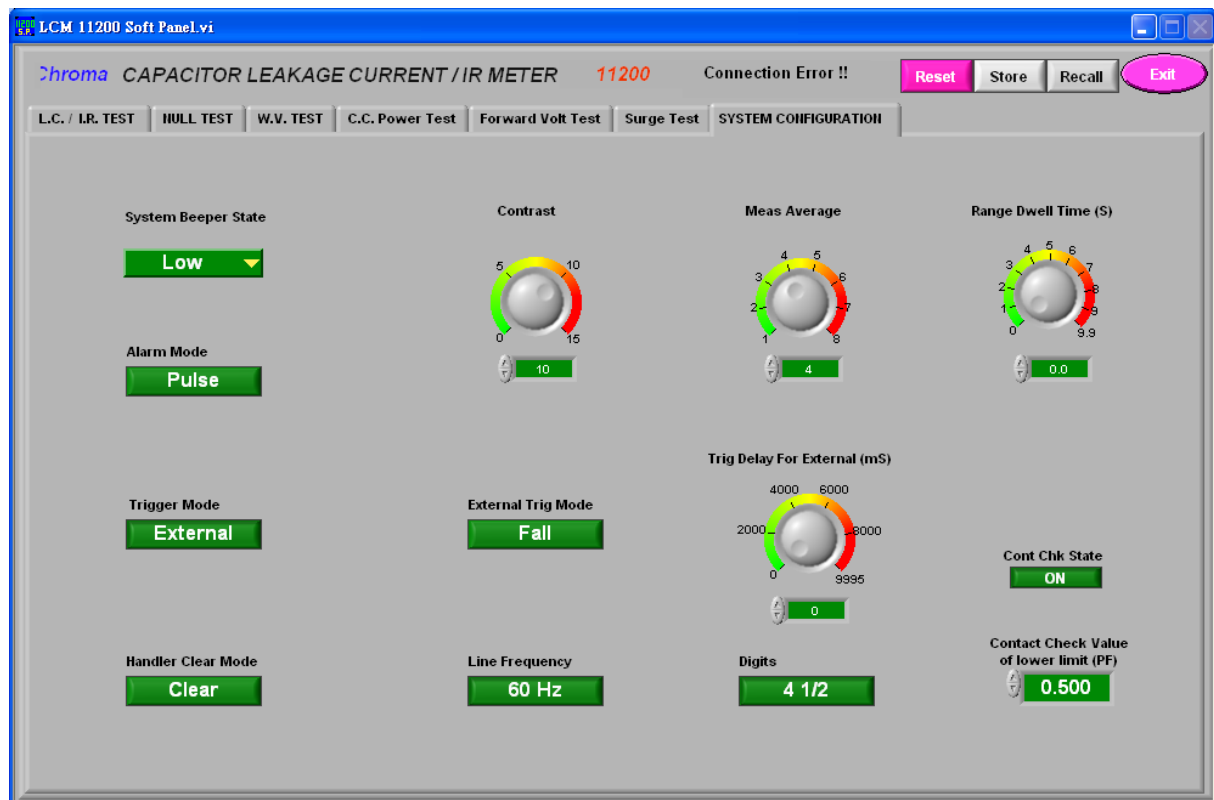


Figure10-1 System Configuration Window

10.2 Buttons Description

- System Beeper State: It sets the volume of warning beeps to OFF, LOW and HIGH.
- Alarm Mode: It sets the sound of alarm to be PULSE or CONTINIE.
- Handler Mode: It sets the mode to Clear (it clears the previous PASS/FAIL test result before measurement) or HOLD (it keeps the PASS/FAIL test result until the next test result appears) when using the Handler interface.
- Trig Mode: It sets to trigger by software or using Handler Box as external trigger.
- Contrast: It sets the LCD contrast in the range of 0~15.
- Measure Average: It sets the average times of measurement in the range of 1~8.
- Range Dwell Time: It sets the time delayed for switching LC/ IR in the range of 0~9.9S.
- Line Frequency: It sets the parameter of input power line frequency.
- Charge Time Mode: It sets the parameter for counting charging time.
 $V_m = V_t \rightarrow$ The charging time starts counting when charged to 90% V_f .
 $V_m = 0V \rightarrow$ The charging time starts counting once the charging begins.
- External Trig Mode: It sets the triggering parameter to be positive/negative edge trigger.

- This parameter is applicable when Trig Mode sets to EXT only.
- Trig Delay For External (mS): It sets the time delayed for trigger in the range of 0 ~ 9995 ms. This parameter is applicable when Trig Mode sets to EXT only.
 - Cont Chk State: It sets the contact check state to ON or OFF. It prevents the measured LC value being misjudged to good due to open circuit or no DUT contact when doing the leakage current automatic test on capacitor.
 - Contact Check Value of lower limit (pf): It sets the lower limit value for contact check. The range is 0.5pF ~ 100.0 pF.
 - Digits: It can select 3 ½, 4 ½ Digital function to display the readings in 3 ½ or 4 ½ digits.



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