Capacitor Leakage Current / IR Meter

11200

Quick Start Guide

Chroma

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The information in this document is subject to change without notice.

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Warranty

All Chroma instruments are warranted against defects in material and workmanship for a period of one year after date of shipment. Chroma agrees to repair or replace any assembly or component found to be defective, under normal use during this period. Chroma's obligation under this warranty is limited solely to repairing any such instrument, which in Chroma's sole opinion proves to be defective within the scope of the warranty when returned to the factory or to an authorized service center. Transportation to the factory or service center is to be prepaid by purchaser. Shipment should not be made without prior authorization by Chroma.

This warranty does not apply to any products repaired or altered by persons not authorized by Chroma, or not in accordance with instructions furnished by Chroma. If the instrument is defective as a result of misuse, improper repair, or abnormal conditions or operations, repairs will be billed at cost.

Chroma assumes no responsibility for its product being used in a hazardous or dangerous manner either alone or in conjunction with other equipment. High voltage used in some instruments may be dangerous if misused. Special disclaimers apply to these instruments. Chroma assumes no liability for secondary charges or consequential damages and in any event, Chroma's liability for breach of warranty under any contract or otherwise, shall not exceed the purchase price of the specific instrument shipped and against which a claim is made.

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Material Contents Declaration

The recycling label shown on the product indicates the Hazardous Substances contained in the product as the table listed below.

: See **<Table 1>**.

: See **<Table 2>**.

<Table 1>

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

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

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

Disposal

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

<Table 2>

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

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

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

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

Disposal

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

Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or specific WARNINGS given elsewhere in this manual will violate safety standards of design, manufacture, and intended use of the instrument. *Chroma* assumes no liability for the customer's failure to comply with these requirements.

BEFORE APPLYING POWER
Verify that the power is set to match the rated input of this power supply.

PROTECTIVE GROUNDING
Make sure to connect the protective grounding to prevent an electric shock before turning on the power.

NECESSITY OF PROTECTIVE GROUNDING
Never cut off the internal or external protective grounding wire, or disconnect the wiring of protective grounding terminal. Doing so will cause a potential shock hazard that may bring injury to a person.

FUSES
Only fuses with the required rated current, voltage, and specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE
Do not operate the instrument in the presence of flammable gases or fumes.

DO NOT REMOVE THE COVER OF THE INSTRUMENT
Operating personnel must not remove the cover of the instrument. Component replacement and internal adjustment can be done only by qualified service personnel.

⚠WARNING Touching the output terminal on the rear panel when the power or current is set and outputting may result in personal injury or death.

Safety Symbols

	**DANGER –** High voltage.
	**Explanation:** To avoid injury, death of personnel, or damage to the instrument, the operator must refer to an explanation in the instruction manual.
	**High temperature:** This symbol indicates the temperature is now higher than the acceptable range of human. Do not touch it to avoid any personal injury.
	**Protective grounding terminal:** To protect against electrical shock in case of a fault. This symbol indicates that the terminal must be connected to ground before operation of equipment.
⚠WARNING	The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a **WARNING** sign until the indicated conditions are fully understood and met.
CAUTION	The **CAUTION** sign denotes a hazard. It may result in personal injury or death if not noticed timely. It calls attention to procedures, practices and conditions.
Notice	The **Notice** sign denotes important information in procedures, applications or the areas that require special attention. Be sure to read it carefully.

Storage, Freight &Maintenance

Storage
When don't use the device, please pack it properly and store under a good environment. (The packing is no needed when the device under appropriate environment.)

Freight
Please use the original packing material when move the device. If the packing material is missing, please use the equivalent buffer material to pack and mark it fragile and keep away from water etc. to avoid damaging the device during movement. The device is precise equipment, please use qualified transportation as possible. And avoid heavy collision etc. that may damage the device.

Maintenance
There is no maintenance operation for general users (except for the one noted in the manual.) Please contact Chroma or its agent if the device is having error judgment. Do not maintain the device by yourself to avoid unnecessary danger and serious damage to the device.

Table of Contents

1. Preface

1.1 Overview

The 11200 Capacitor Leakage Current/IR Meter is an automatic instrument used for testing and analyzing components. The device was designed to solve the problems of low labor efficiency and low product quality that have occurred since the electronics industry began to flourish. It is able to increase the work efficiency and enhance the product quality to international standard.

The test functions equipped with this device containing L.C, I.R, W.V and etc., which are perfect functions for the production line and quality control.

Via the internal-controlled auto mode and the programmable mode measurement functions, the instrument is capable of providing fast, highly accurate, convenient and reliable tests at low cost. It has the functions of Hi/Lo-limit comparison, selection control for voltage test, data storage setting, GPIB interface for remote controlling 11200 and data transfer as well as statistics analysis function from PC. The handler interface is able to trigger the instrument for measurement and then send the test results to an external device for the component response check.

The multi-function test device, ergonomic keyboard design, guided panel operation, extra-large LCD, and password protection makes the 11200 instrument very easy to operate. Its protection enables the test results to be shown on the display clearly.

The 11200 can be calibrated by an exclusive measurement device (optional) with simple measurement parameters. The calibration can be done easily by giving the condition of Null in the procedure.

1.2 Checking before Use

Before shipment, this instrument was inspected and found to be free of mechanical and electrical defects. As soon as the instrument is unpacked, inspect for any damage that may have occurred in transit. Save all packing materials in case the instrument has to be returned. If damage is found, please file claim with carrier immediately. Do not return the instrument to Chroma without prior approval.

Upon receipt of the instrument, please check on the following items:

(1) If there are any damages or scratches on the product surface.

(2) The standard and optional accessories came with the instrument as listed in Table 1-1.

Item	Qty	Remarks
Power Cord	1	A 1 meter bend power cord
Adaptor	1	For the power plug from 3P to 2P
WIRE BANA.PLUG/Alligator Clip to White High Voltage Cable for 90 CM	1	A test cable
Zentech 705 BNC Test Cable + Alligator Clip for 1M	1	A test cable
Slow Blow Fuse 2A	2	For power source AC 230V use
Slow Blow Fuse 4A	2	For power source AC 115V use
User's Manual	1	English

Table 1-1 Standard Accessories

Note Only name item and part no. are required when ordering any the accessories.

Optional Accessory

Item	Qty	Remarks
(A110235) GPIB&HANDLER Card for 11021 /16502/11200	1	GPIB / HANDLER Card

Notice For more detail information, please see the User's Manual in the CD attached to the shipment.

2. Installation

2.1 Ambient Environment

(1) Do not use the meter in a dusty or vibrating location. Do not expose it to sunlight or corrosive gas. Be sure that the ambient temperature is 10 ~ 40°C and that the relative humidity is below 90%.

(2) The rear of the meter is equipped with a cooling fan to keep the internal temperature down, so adequate ventilation should be ensured. The meter should be located at least 10cm from any object or wall behind it. Do not block the left and right ventilation holes to keep the meter in good precision.

(3) The meter has been carefully designed to reduce the noise from the AC power source. However, it should be used in a noise-free or as low as possible environment. If noise is inevitable, please install a power filter.

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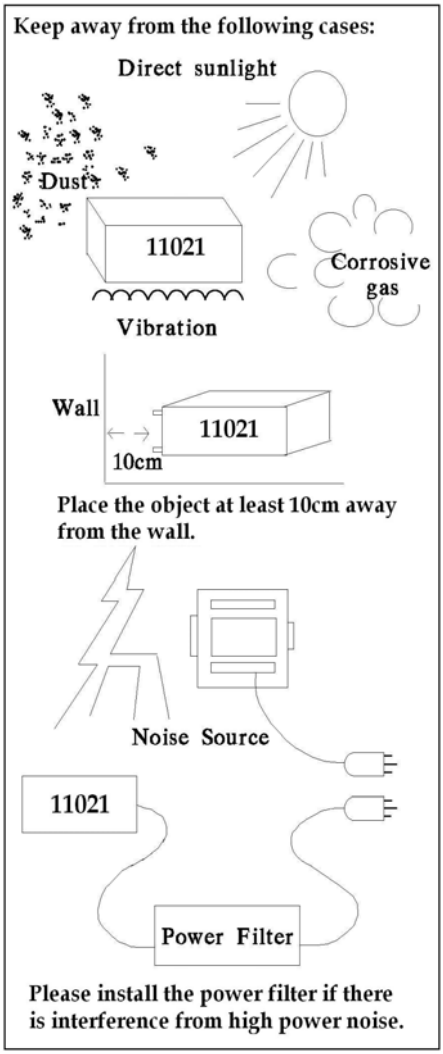


2.2 Power Line Connection

Before plugging in the power cord, make sure the power switch is off and the voltage selector on the rear panel meets the required voltage (115 or 230V). Please use the power supply frequency of 50Hz or 60Hz.

2.3 Fuse

There is one fuse installed in the rear panel, please be aware of the following when replacing it:

1. First turn off the power and unplug the power cord before changing the fuse.
2. The specification of fuse:
   AC 100 V～120 V → T4.0 A，250 V (A21 020900)
   AC 220 V～240 V → T2.0 A，250 V (A21 018700)

For safety and noise reduction, it is necessary to use a 3-pin power cord to connect the power inlet on the rear panel for AC line input and to ground the GROUND terminal on the front panel as Figure 2-1 shows below.

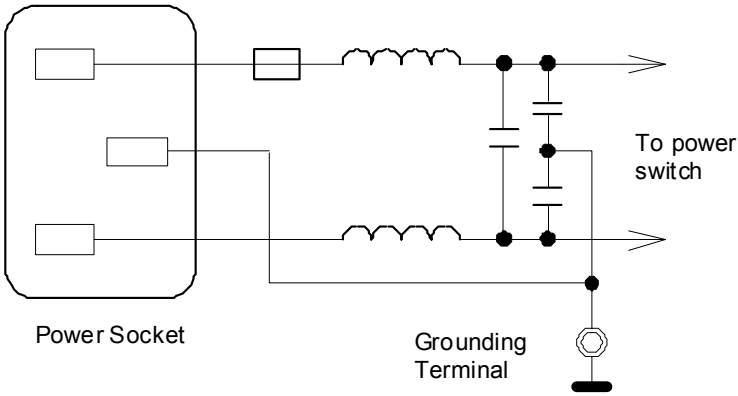


Figure 2-1 Line Input Configuration

2.4 Power Regulation

As this instrument is a precision electronic test device, the accuracy might be severely influenced by the undulated input power after tested. There is ±10% changeable power even in the laboratory, so it is suggested to use a regulator between the power sources and test devices. This is the best way to eliminate the variation of measured data caused by the unstable power voltage.

2.5 Connecting the DUT for Leakage Current Test

Connect the UNKNOWN (LEAKAGE CURRENT) test terminal on the front panel to the DUT (Device Under Test) for leakage current test. Be sure that the DUT polarity is connected correctly, where the DUT's negative terminal is connected to the **HV (-)** of 11200 and the positive terminal is connected to the **INPUT** of 11200 as shown in Figure 2-1.

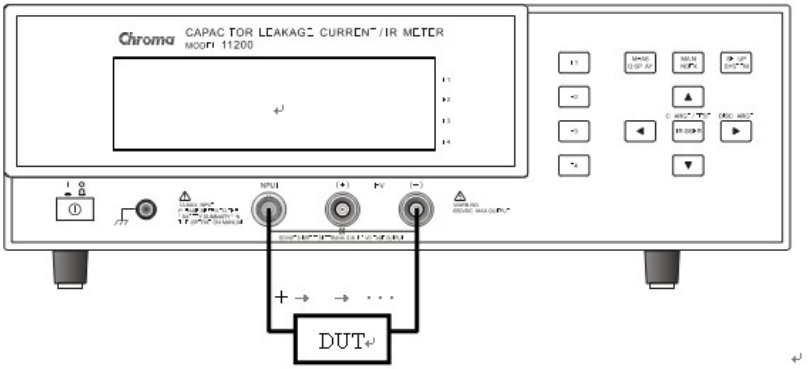
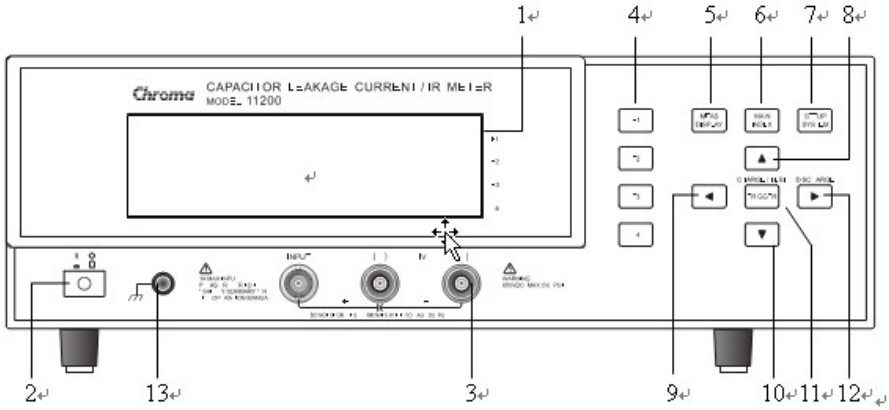


Figure 2-2 DUT Connection for Leakage Current Test

CAUTION Be ware of the high voltage hazard as the maximum output from the UNKNOWN (LEAKAGE CURRENT) is DC 650V. Do not touch the UNKNOWN (LEAKAGE CURRENT) terminal, the test cable and the DUT during test to avoid electric shock. Do not remove the DUT before it is fully discharged as it may contain the voltage that could cause any danger.

3. Description of Panel

3.1 Front Panel



(1) LCD Display

The display of this test device is a 64 X 240 character mode LCD. All measurements and settings can be clearly displayed and seen.

(2) Power Switch

It switches the power to on or off.

(3) LEAKAGE CURRENT Terminal

The leakage current test terminal is composed of two notch type terminals and one BNC terminal, and is connected DUT directly by a test cable. Be sure that the meter is in stop testing or discharge mode when connecting or disconnecting it to a DUT as the output voltage of its negative terminal (white) is pretty high [V(DC) = 0V ~ -650V].

(4) Selection Keys

There are 4 selection keys and their major functions are to show the different conditions of each function or other options which may need to be selected depending on the user's requirements.

(5) Measure Display

Upon pressing this key, the instrument is in basic component measurement & analysis mode. In this screen, each test parameter can be changed directly and the value read such as test voltage, measurement parameter, measurement speed, and etc.

(6) MAIN INDEX

Pressing this key allows entry to the main index screen. In this screen you may select the test function you wish to use, for instance the SEQ.TEST, STEP TEST, NULL, W.V TEST, the function of COMPARE, and etc.

(7) System Setup

Pressing this key gives access to the main system parameters setup screen, which allows each system parameter to be changed directly, e.g., the calibration of this instrument, the memory management, the selection and setting for each system and measurement parameters. (The functions of calibration and memory management require a password for entry).

(8) ~ (11) Cursor

There are [▲], [▼], [◄], and [►] four arrow keys. These keys set and control the cursor movement, which can be useful when inputting various parameters. They can also be used as selection keys; for instance use [◄], [►] to change the range, and then use [▲], [▼] to set the voltage.

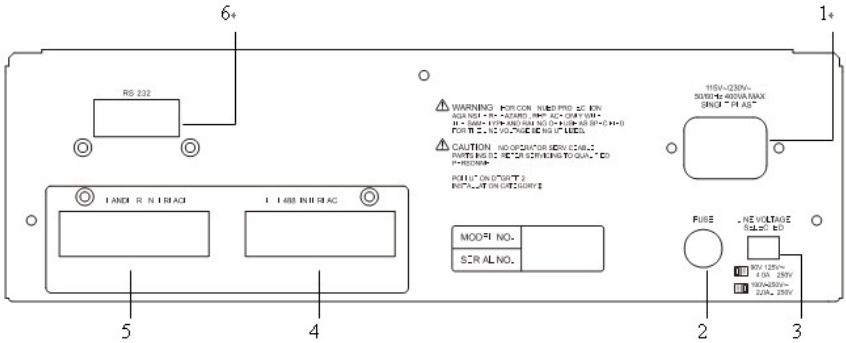
(12) Trigger

This is the key to trigger the start of measurement. When the measurement is in manual mode, press this key to perform the measurement once.

(13) Isolation Terminal

This terminal connects to the case of the instrument. Connect this terminal to the isolation area of DUT to avoid the test value from interfering by external signal that may affect its accuracy.

3.2 Rear Panel



(1) AC Line Socket
It meets the International Electromechanical Commission 320 standard for 3-wire socket. Please use the power cord of Beeline SPH-386 or similar (the accessory W12 010130).

(2) Fuse
A 4A or 2A slow blow fuse is used to prevent the over current from occurring when the instrument power is in 90 ~ 125V or 190 ~ 250V.

(3) Power Voltage Switch
Be sure to power off the instrument before switching the voltage. Use a small flat screwdriver to switch the power voltage to the proper position.

(4) IEEE-488 INTERFACE Connector
The input/output connecting cable follows the IEEE488-1978 standard. The functions include: total remote control, selected result output, with or without controller, and IEEE-488 interface connection acceptance.

(5) HANDLER INTERFACE Connector
It is the element handler. The output is GO/NG and status etc., while the input is “Start” signal. It accepts Amphonol “Microribbon” plug or P/N 57-30240 or equivalent products.

(6) RS232 INTERFACE Connector
The input/output connecting cable follows the RS232 standard. The functions include: total remote control, selected result output, with or without controller, and RS232 interface connection acceptance.

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