Programmable AC Source

61601/61602/61603/61604

Quick Start Guide

Chroma

www.chromaate.com

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CHROMA ATE INC.
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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.

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Any recommendations made by Chroma for use of its products are based upon tests believed to be reliable, but Chroma makes no warranty of the results to be obtained. This warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for Chroma any liability in connection with the sale of our products other than set forth herein.

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Material Contents Declaration

A regulatory requirement of The People's Republic of China defined by specification SJ/T 11364-2006 mandates that manufacturers provide material contents declaration of electronic products, and for Chroma products are as below:

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.

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CE

Declaration of Conformity

For the following equipment :

61505 AC SOURCE

(Product Name/ Trade Name)

Chroma AC SOURCE 61505 ,61601 ,61602 ,61603 ,61604 ,61501 ,61502 ,61503 ,61504

(Model Designation)

Chroma ATE INC.

(Manufacturer Name)

66, Hwa-Ya 1st Rd., Hwa-Ya Technical Park, Kuei-Shan Hsiang, Taoyuan Hsien 333, Taiwan

(Manufacturer Address)

Is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directives (2004/108/EC), For the evaluation regarding the Directives, the following standards were applied :

EN 61326 : 2006 Class A

EN 61326 : 2006(industrial locations)

IEC 61000-4-2:1995+A1:1998+A2:2000, IEC 61000-4-3:2006

IEC 61000-4-4:2004, IEC 61000-4-5:2005, IEC 61000-4-6:2006

IEC 61000-4-8:2001, IEC 61000-4-11:2004

EN 61010-1:2001

The following importer/manufacturer or authorized representative established within the EUT is responsible for this declaration :

Chroma ATE INC.

(Company Name)

66, Hwa-Ya 1st Rd., Hwa-Ya Technical Park, Kuei-Shan Hsiang, Taoyuan Hsien 333, Taiwan

(Company Address)

Person responsible for this declaration:

Mr. Benjamin Huang Benjamin Huang

(Name, Surname)

T & M BU Director

(Position/Title)

Taiwan	**2009.09.14**	
(Place)	(Date)	(Legal Signature)

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.

ACOUSTIC NOISE INFORMATION
This product has a sound pressure emission (at the operator's side) < 65dB(A).

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1. Introduction

The series of Chroma AC source 61601/61602/61603/61604 are high efficiency AC source which provide sine wave output with low distortion, and accurate measurement of power. The DSP microprocessor generates accurate, stable output voltage and frequency. The PWM design of power stage allows for full volt-ampere into loads. The front panel has both RPG (rotary pulse generator) and keypad controls for setting the output voltage and frequency. The LCD provides a complete operating state of the unit to the user. Remote programming is accomplished either through the GPIB bus or the RS-232C serial port.

1.1 Names of Parts

1.1.1 Front Panel

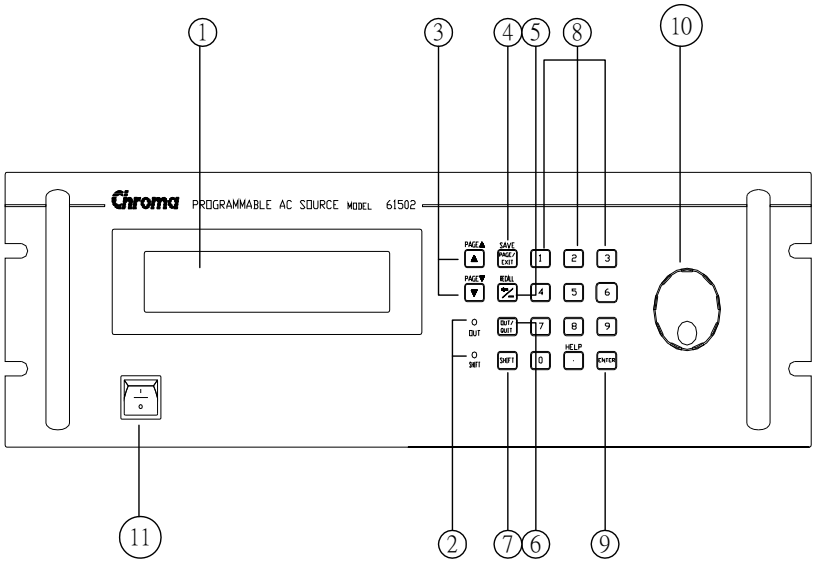


Figure 1-1 Front Panel

Table 1-1 Description of the Front Panel

Item	Symbol	Description
1		***Display***: The LCD is to display configuration, output setup, and measurement results.
2		***Indicator LED***: "OUT" and "SHIFT", for showing activation of output and shift mode, are available which are located on the keypad area next to the corresponding keys.
3	▲ ▼ ---------or-------- PAGE ▲ PAGE ▼	***Cursor moving keys***: These two keys are to move the cursor to different directions respectively. In normal mode, pressing any of these two keys will change the place of the cursor. Under shift mode, these keys enable the LCD display to change to last page or next page if there are ▲ or ▼ patterns in right-down side of display.
4	**PAGE/EXIT** ---------or--------- SAVE	***PAGE or EXIT command key***: Pressing this key will make the LCD display switching between MAIN PAGE and CHOICE PAGE. Or change to CHOICE PAGE in each functional list. Under shift mode, pressing this key on MAIN PAGE, the uses can save the output setting (see 3.8.1 in *Programmable AC Source 61601/ 61602/61603/61604 User's Manual*). If pressing the key on CHOICE PAGE, the user can save system data (see 3.8.2 in *Programmable AC Source 61601/61602/61603/ 61604 User's Manual*).
5	⇦ / - ----------or--------- RECALL	***Backspace and Minus command key***: Pressing this key will erase the keyin number. Or it may show " - ", if no number is in front of cursor. Under shift mode, pressing the key on MAIN PAGE, the user can recall the output setting (see 3.8.1 in *Programmable AC Source 61601/61602/61603/61604 User's Manual*). If pressing the key on CHOICE PAGE, the user can recall system data (see 3.8.2 in *Programmable AC Source 61601/61602/61603/ 61604 User's Manual*).
6	**OUT/QUIT**	***OUT/QUIT command key***: Pressing this key may enable the ac source output voltage or quit the output voltage.

Item	Symbol	Description
7	**SHIFT**	***Shift mode selection key***: Pressing this key will switch the ac source from normal operational mode to the shift mode.
8	**0** to **9**, and • ----------or---------- HELP	***Numeric and decimal keys***: The user can program numeric data by pressing the digital keys and the decimal key. Under shift mode, pressing • acts the HELP function. The LCD display will show more information about cursor locating place.
9	**ENTER**	**ENTER** ***key***: It is to confirm the setting of arameters.
10		***RPG***: The user can input programming data or options by turning the RPG to the desired ones.
11		***Main power switch***: It powers on or off.

2. Installation

2.1 Inspection

After unpacking the instrument, please inspect any damage that may have occurred during the shipment. Save all packing materials in case the instrument has to be returned one day. If any damage is found, please file a claim with the carrier immediately. Do not return the instrument to the factory without obtaining the prior RMA acceptance from Chroma.

2.2 Preparation for Use

In the beginning, the instrument must be connected with an appropriate AC line input. Then, since it is intelligently cooled by fans, it must be installed in sufficient space for circulation of air. It should be used in an area where the ambient temperature does not exceed 40°C.

2.3 Requirements of Input Power

2.3.1 Ratings

Input Voltage Range	:	90 ~ 250 Vac, single phase
Input Frequency	:	47-63 Hz
Max. Current	:	61601: 8 A 61602: 16 A 61603: 21 A 61604: 28 A

CAUTION The AC source will be damaged if it is operated at an input voltage that is outside its configured input range.

2.3.2 Input Connection

The input terminal block is located on the rear panel of the instrument. The power cord must be a three-conductor cord rated at least for 85°C. The power line input must have a current rating which is greater than or

equal to the maximum current rating of the AC source. Do not use three separate wires to connect power to the input of the AC source. Do the following things one by one:

1. Remove the safety cover from the back of the AC source.
2. Screw the power cord to the terminal blocks of the AC source as follows:
   Green or green/yellow wire to the terminal labeled “G”.
   White or blue wire to the terminal labeled “N”.
   Black or brown wire to the terminal labeled “L”.
3. Slip the safety cover over the ac input terminal strip, and secure the cover with two screws.

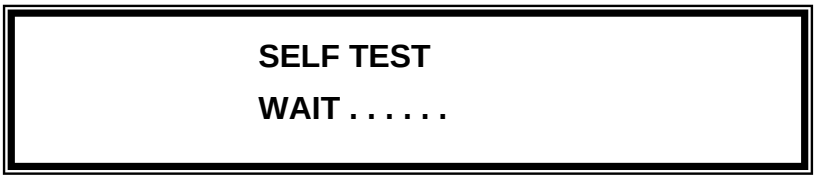
⚠WARNING To protect the operators, the wire connected to the GND terminal must be connected to the earth ground. Under no circumstances shall this AC source be operated without an adequate ground connection.

Installation of the power cord must be done by a professional and in accordance with local electrical codes.

2.4 Power-on Procedure

⚠WARNING Before turning on the instrument, all protective earth terminals, extension cords, and devices connected to the instrument must be connected to a protective earth ground. Any interruption of the protective earth grounding will cause a potential shock hazard that could result in personal injury.

Apply the line power and turn on the power switch on the front panel. The AC source will do a series of sel tests. The LCD on the front panel will light up and display as below:



Meanwhile, the AC source does the memory, data and communication self test. After the routines of the self test are done, the display shows the MODEL number, and the serial number of the AC source, and it shows an "OK" at the right side of each test item indicating that the item is no problem. It takes about six seconds to complete the routines of the self test. Then the display shows the versions of software as below.

MODEL : 61602	**SERIAL NO : 123456**
1. DISPLAY < OK >	**Ver : 1.01**
2. WAVEFORM < OK >	**Ver : 1.02**
3. REMOTE < OK >	**Ver : 1.03**

If any failure is detected on a certain item, an "ERROR CODE" will be shown at the right side of that item. The error messages and trouble-shooting are shown on 6.2 in *Programmable AC Source 61601/ 61602/61603/61604 User's Manual*. The test item "3. REMOTE "shows" <EMPTY>, if the option board (with GPIB and RS-232) is not connected.

After finishing memory, data and communication self-test, the AC source do the power output self test. In this procedure, the output relays are in OFF status to sure not harming the load connecting on output terminal. The AC source will program 300Vac and measure the voltage. If the measured voltage is over 300V±5V, the power self-test is failed, and the display will show "NG". If it's ok, the display is shown as below. Then, it changes to MAIN PAGE automatically.

OUTPUT SELF TEST < OK >

CAUTION

1. The user can do diagnosis if error or NG happened in power-on self-test procedure. Please see 6.2 in *Programmable AC Source 61601/61602/61603/ 61604 User's Manual*.
2. The inner digital circuit of AC source maybe not reset if turn off power then turn on immediately.

Waiting more than 3 seconds is suggested to turn on power after turning off.

Notice

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

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