Programmable AC Source

61505

Quick Start Guide

Chroma

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61505
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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

(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.
	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.
	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 61505 are high efficiency AC power 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

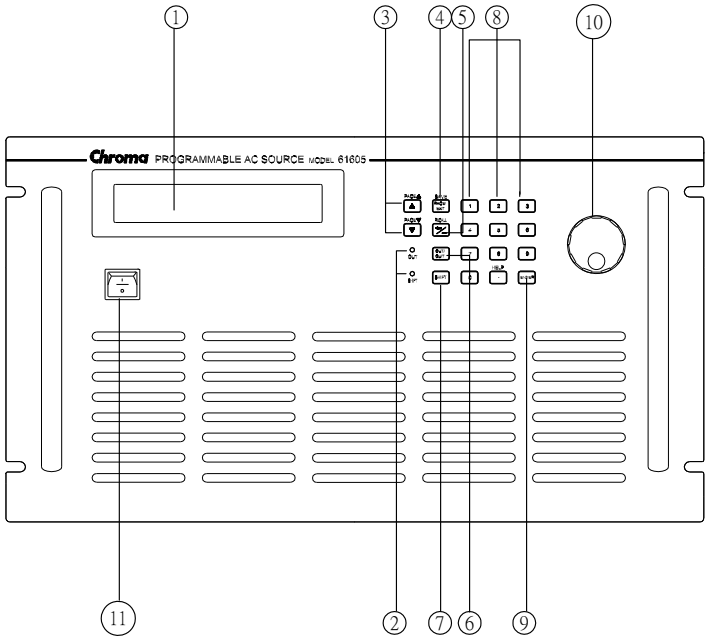


Figure 1-1 Front Panel

Table 1-1 Description of 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 can 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 user can save the output setting (see 3.8.1 in the *Programmable AC Source 61505 User's Manual*). If pressing the key on CHOICE PAGE, the user can save system data (see 3.8.2 in the *Programmable AC Source 61505 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 the *Programmable AC Source 61505 User's Manual*). If pressing the key on CHOICE PAGE, the user can recall system data (see 3.8.2 in the *Programmable AC Source 61505 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 parameters.
10		***RPG***: The user can input programming data or options by turning the RPG to the desired ones.
11		***Main Power Switch***: It switches the power 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 fans intelligently cool it, 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.

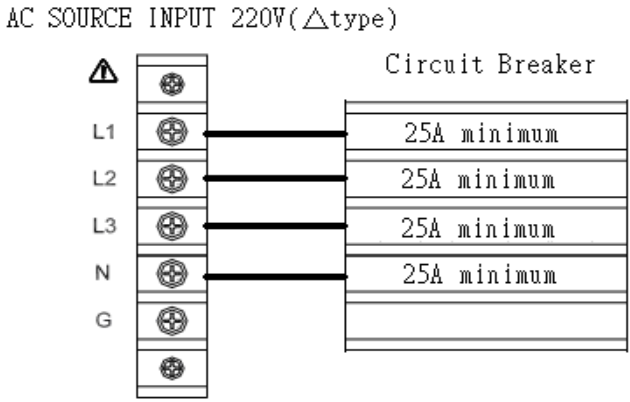
2.3 Requirements for Input Power

2.3.1 Ratings

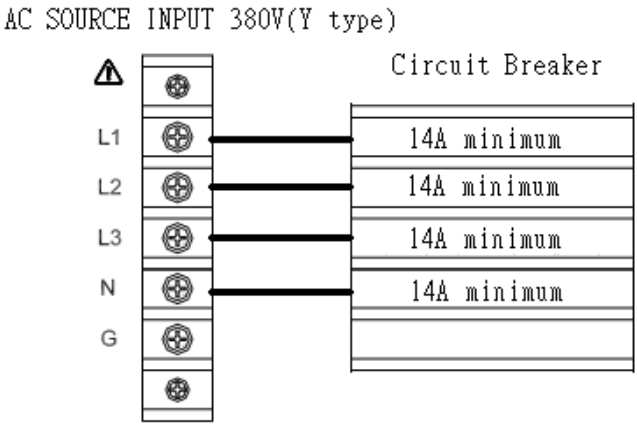
Input Voltage Range:	190-250 V_{LL}, 3 phases 4 wires Δ, or 329-433 V_{LL} , 3 phases 5 wires Y
Input Frequency:	47-63 Hz
Max. Current:	220V 3~ (△ type) 25 A, per phase 380V 3~ (Y type) 14 A, per phase

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

- The specification of Circuit Breaker should be notified for Input Connection.
  220V 3~ (△ type) Max 25A/Phase
  (This △ type wiring needs to comply with the Circuit Breaker spec. 220Vac/25A minimum.)



380V 3~ (Y type) Max 14A/Phase
(This Y type wiring needs to comply with the Circuit Breaker spec. 380Vac/14A minimum)



- **Maintenance & Cleaning:** Remove all connected wires and cables on the instrument before cleaning. Use a brush to clean the dust on it and if there are stains on the chassis that cannot be removed by brush, wipe it with volatile liquid (such as Cleaning Naphtha). Do not use any corrosive liquid to avoid damaging the chassis. Use a damp cloth with soap water or soft detergent to clean the LCD front panel. For internal cleaning, use a low-pressure air gun to vacuum the dust inside or send it back to our agent for cleaning.

- **Common Environment Conditions**
  (1) Indoor use.
  (2) Altitude up to 2000m.
  (3) Temperature 0°C to 40°C.
  (4) Transient over voltage is impulse withstand CAT II.
  (5) Pollution degree 2.

2.4 Input Connection

The input terminal block is located on the rear downside panel of the instrument. The power cord must be 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.

CAUTION There are two different input voltage rating. One is 380 V_{LL} 3 phases 5 wires (Y), and another is 220 V_{LL} 3 phases 4 wires (Δ). Be careful to verify that what kind of the main voltage you have.

Conduct the following procedure step by step.

1. Remove the safety cover from the back of the AC source.
2. Screw the power cord to the input terminal blocks of the AC source (see Figure 2-1 and Figure 2-2).
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.

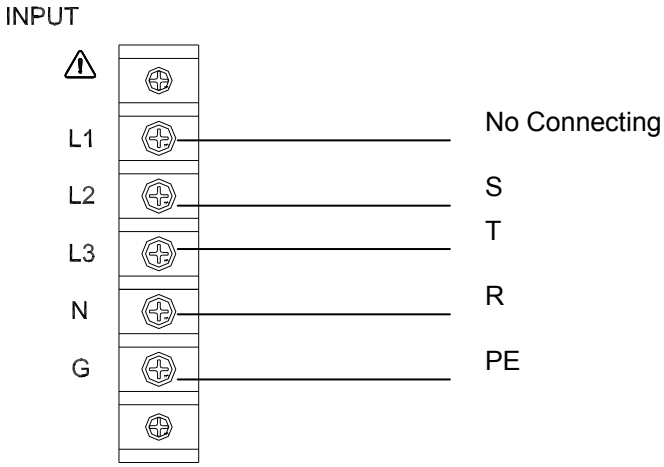


Figure 2-1 220 3~Δ Input Connection

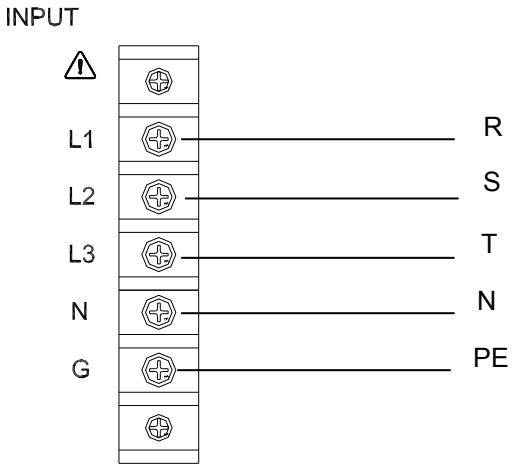


Figure 2-2 380 3~Y Input Connection

2.5 Output Connection

The output terminal block is located at the rear of the AC source. Load connecting to the "N" and "L" is done at the output terminals. To meet the safety requirements, the safety cover must be fastened. The wires to the load must be sufficiently large gauges, so they will not overheat while carrying the output current. Please see Figure 2-3.

Notice Output terminal labeled "L" is the "+" terminal, terminal labeled "N" is the "-" terminal when output voltage contains DC composition.

2.6 Remote Sense Connection

The remote sense function of the AC source monitors the voltage at the load instead at the output terminal of the AC source. It ensures the delivery of accurate voltage as programmed at the load by automatically compensating the output voltage drop over the connecting cable.

Remove the iron chip from the “SN” and “SL” terminals; connect the remote sense to the load as shown in Figure 2-3. Because the sensing leads carry only a few milliamperes, the wires for sensing are much lighter than the load leads. The sensing leads are part of the feedback path of the AC source, so they must be kept at a low resistance in order to maintain the best performance. Connect the sensing leads carefully so that they will not be open-circuited. If the sensing leads are left unconnected or become open-circuited during operation, the AC source will disable the output. The sensing leads must be a twisted pair to minimize the pickup of external noise. The sensing leads need to be connected to the load as close as possible.

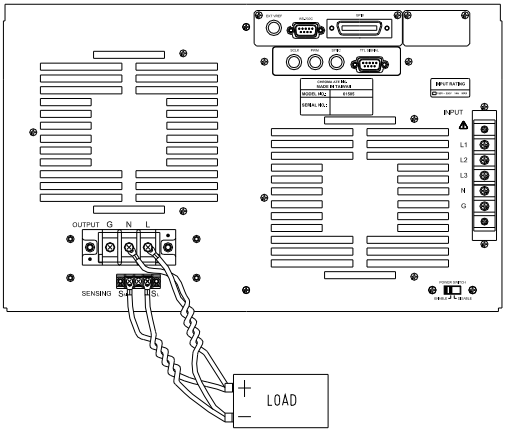


Figure 2-3

2.7 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.

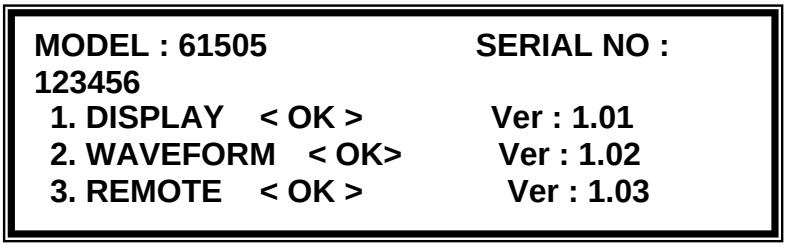
Apply the line power and turn on the power switch on the front panel. The AC source will do a series of self-tests. The LCD on the front panel will light up and display as below:

SELF TEST

WAIT . . . . . .

Meanwhile, the AC source does the memory, data and communication self-test. After the routines of the self-test be 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.



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 troubleshootings are shown on 7.2 in the *Programmable AC Source 61505 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.

Notice

1. The user can do diagnosis if error or NG happens in power-on self test procedure. Please see 7.2 in the *Programmable AC Source 61505 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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