



6700 Series
Linear
Programmable AC Power Source
Operation Manual

ER 1.01

WARRANTY

eec certifies that the instrument listed in this manual meets or exceeds published manufacturing specifications. This instrument was calibrated using standards that are traceable to the National Institute of Standards Taiwan.

Your new instrument is warranted to be free from defects in workmanship and material for a period of (2) year for standard model from date of shipment. During the warranty period, you must return the instrument to eec or its branches or its authorized distributor for repair. eec reserves the right to use its discretion on replacing the faulty parts or replacing the assembly or the whole unit.

Follow below states, eec will void your warranty.

- Operate under non-normal , contrived omission, or accidental calamity (including, temblor, floods, rebellion, and fire etc.)
- Any non-authorized modifications, tampering or physical damage.
- Elimination of any connections in the earth grounding system or bypassing any safety systems.
- Use of non-authorized parts in the repair of this instrument. Parts used must be parts that are recommended by eec as an acceptable specified part.

This warranty does not cover accessories not of eec manufacture.

Except as provided herein, eec makes no warranties to the purchaser of this instrument and all other warranties, express or implied (including, without limitation, merchantability or fitness for a particular purpose) are hereby excluded, disclaimed and waived.

eec recommends that your instrument be calibrated on a twelve month cycle.

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CHAPTER 1. INTRODUCTION

1.1 Safety Precaution

- This product and its related documentation must be reviewed for familiarization with safety markings and instructions before operation.
-
- Before applying power verify that the instrument is set to the correct line voltage and the correct fuse is installed.
- When using an oscilloscope to measure DUT waveform, please refer description below to avoid DUT, instrument and oscilloscope damages. When the output of AC source has N-G or L-G shorted, customer must use differential isolation type of oscilloscope probe or using isolated oscilloscope.
- In order to avoid the interference, please DON'T combine the cables of input and output from instruments in bundle with GPIB or RS232 cable

To prevent accidental injury or death, these safety procedures must be strictly observed when handling and using the test instrument.

1.2 Service and Maintenance

User Service

To prevent electric shock do not remove the instrument cover. There are no user serviceable parts inside. Routine maintenance or cleaning of internal parts is not necessary. Any external cleaning should be done with a clean dry or slightly damp cloth. Avoid the use of cleaning agents or chemicals to prevent any foreign liquid from entering the cabinet through ventilation holes or damaging controls and switches, also some chemicals may damage plastic parts or lettering. Any replacement cables and high voltage components should be acquired directly from eec or its distributor.

Service Interval

The instrument must be returned at least once a year to an eec authorized service center for calibration and inspection of safety related components. eec will not be held liable for injuries suffered if the instrument is not properly maintained and safety checked annually.

User Modifications

Unauthorized user modifications will void your warranty. eec will not be responsible for any injuries sustained due to unauthorized equipment modifications or use of parts not specified by eec. Instruments returned to eec with unsafe modifications will be returned to their original operating condition at the customer's expense.

CHAPTER 2. GETTING STARTED

This section contains information for the unpacking, inspection, preparation for use and storage of eec product. °

2.1 Unpacking and Inspection

Your instrument was shipped in a custom foam insulated container that complies with ASTM D4169-92a Assurance Level II Distribution Cycle 13 Performance Test Sequence. If the shipping carton is damaged, inspect the contents for visible damage such as dents, scratches, or broken display. If the instrument is damaged, notify the carrier and eec 's customer support department. Please save the shipping carton and packing material for the carrier's inspection. Our customer support department will assist you in the repair or replacement of your instrument. Please do not return your product without first notifying us. Please retain all of the original packaging materials.

2.2 Preparation For Use

2.2.1 Power Requirements

This instrument requires a power source of 115 volts AC \pm 15%, 50/60 Hz single phase or 230 volts AC \pm 15%, 50/60 Hz single phase. Please check the rear panel to be sure the proper switch setting is selected for your line voltage requirements before turning your instrument on.

CAUTION

Do not switch the line voltage selector switch located on the rear panel while the instrument is on or operating. This may cause internal damage and represents a safety risk to the operator.

2.2.2 Power Cable

WARNING

Before connecting power to this instrument, the protective ground (Earth) terminals of this instrument must be connected to the protective conductor of the line (mains) power cord. The main plug shall only be inserted in a socket outlet (receptacle) provided with a protective ground (earth) contact. This protective ground (earth) **must not be defeated** by the use of an extension cord without a protective conductor (grounding).

2.3 Environmental Conditions

Operating Environment

Temperatures: 0° - 40° C (32°-104°F)

Relative humidity: 20% - 80%

Altitude: 2,000 meters (6,500 inches)

The instrument should also be protected against temperature extremes which may cause condensation within the instrument.

Storage and Shipping Environment

This instrument may be stored or shipped in environments with the following limits:

Temperature..... -40° to +55°C

Altitude: 7,620 meters (25,000 inches)

The instrument should also be protected against temperature extremes, which may cause condensation within the instrument.

Packaging

Original Packaging

Please retain all original packaging materials that you originally received. If you are returning your instrument to us for servicing please repackage the instrument in its original container. Please enclose the instrument with all options, accessories and test leads. Indicate the nature of the problem or type of service needed. Also, please mark the container "FRAGILE" to insure proper handling.

Other Packaging

If you do not have the original packaging materials, please follow these guidelines:

- Wrap the instrument in a bubble pack or similar foam. Enclose the same information as above.
- Use a strong double-wall container that is made for shipping instrumentation. 350 lb. test material is adequate.
- Use a layer of shock-absorbing material 70 to 100 mm (3 to 4 inch) thick around all sides of the instrument. Protect the control panel with cardboard.
- Seal the container securely.
- Mark the container "FRAGILE" to insure proper handling.

CHAPTER 3. SPECIFICATIONS

3.1 Specification

MODEL		6705	6710	6720	6730	6740
INPUT						
Phase		1Ø				
Voltage ^{*1}		115 / 230Vac±15%		230Vac±15%		
Frequency		47 - 63Hz				
Max. Current		16A / 8A	30A / 16A	30A	50A	60A
Power Factor		0.7				
AC OUTPUT						
Max. Power		500VA	1000VA	2000VA	3000VA	4000VA
Max Current (r.m.s) ^{*2}	0 - 150V	4.2A	8.4A	16.8A	25.2A	33.6A
	0 - 300V	2.1A	4.2A	8.4A	12.6A	16.8A
Max Current (peak)	0 - 150V	16.8A	33.6A	67.2A	100.8A	134.4A
	0 - 300V	8.4A	16.8A	33.6A	50.4A	67.2A
Option 0 - 600V						
Max Current (r.m.s) ^{*3}	0 - 300V	2.1A	4.2A	8.4A	12.6A	16.8A
	0 - 600V	1.05A	2.1A	4.2A	6.3A	8.4A
Max Current (peak)	0 - 300V	8.4A	16.8A	33.6A	50.4A	67.2A
	0 - 600V	4.2A	8.4A	16.8A	25.2A	33.6A
Phase		1Ø / 2W				
Total Harmonic Distortion (T.H.D)		<p><0.5% at output voltage within the 80 - 140Vac at Low Range or the 160 - 280Vac at High Range</p> <p><0.5% at output voltage within the 160 - 280Vac at Low Range or the 320 - 560Vac at High Range (Option 0 - 600V)</p> <p><1% at output voltage within the 80 - 140Vac at Low Range or the 160 - 280Vac at High Range for 501 - 1000Hz (Option 45 - 1000Hz)</p>				
Crest Factor		≥ 4				
Line Regulation		0.1% max for ± 10% line change				
Load Regulation		≤0.5% (Resistive Load)				
Response Time		< 100µS				
SETTING						
Voltage	Range	0 - 300V, 150V / 300V Auto or 0 - 600V, 300V / 600V Auto (Option 0 - 600V)				
	Resolution	0.1V / 0.2V				
	Accuracy	±(0.5% of setting + 2counts)				
Frequency	Range	45 - 500Hz Full Range Adjust				

	Resolution	0.1Hz at 45 - 99.9Hz, 1Hz at 100 - 500Hz	
	Accuracy	±0.02% of setting	
Frequency	Range	45 - 1000Hz	
(Option 45Hz - 1KHz)	Resolution	0.1Hz at 45 - 99.9Hz, 1Hz at 100 - 1000Hz	
	Accuracy	±0.02% of setting	
Starting& Ending Phase Angle	Range	0 - 360°	
	Resolution	1°	
	Accuracy	±1° (45 - 65HZ)	
MEASUREMENT			
Voltage	Range	0.0 - 300.0V / 0.0 - 600.0V	
	Resolution	0.1V / 0.2V	
	Accuracy	± (0.5% of reading + 2counts) at Voltage > 5V	
Frequency	Range	0.0Hz - 1000.0Hz	
	Resolution	0.1Hz	
	Accuracy	±0.1Hz at 45.0 - 500.0Hz / ±0.5Hz at 501.0 - 1000.0Hz	
Current (r.m.s)	Range	L	0.000 - 3.500A
		H	3.00 - 35.00A
	Resolution*4	L	0.001A
		H	0.01A
	Accuracy	L	± (0.5% of reading + 5counts) for 5 - 300V / ± (0.5% of reading + 10counts) for 5 - 600V
		H	± (0.5% of reading + 3counts) at Voltage > 5V
Current (peak)	Range	0.0 - 200.0A	
	Resolution	0.1A	
	Accuracy	± (1% of reading + 2counts) at Voltage > 5V	
Power	Range	L	0.0 - 350.0W
		H	300 - 4000W
	Resolution	L	0.1W
		H	1W
	Accuracy	L	± (0.6% of reading + 5 counts) at PF > 0.5 for 60 - 300V / ± (0.5% of reading + 30counts) at PF > 0.5 for 120 - 600V
		H	± (0.6% of reading + 2 counts) at PF > 0.5 for 60 - 300V / ± (0.5% of reading + 5counts) at PF > 0.5 for 120 - 600V
Power (内部規格)	Accuracy	± (1% of reading + 15 counts) at <100Hz PF < 0.5 for 5 - 300V, and <100Hz PF ≤ 1 for 5 - 60V ± (2% of reading + 20 counts) at >100Hz PF < 0.5 for 5 - 300V, and >100Hz PF ≤ 1 for 5 - 60V	

		$\pm (1\% \text{ of reading} + 10 \text{ counts})$ at <100Hz PF < 0.5 for 5 - 300V, and <100Hz PF ≤ 1 for 5 - 60V $\pm (2\% \text{ of reading} + 10 \text{ counts})$ at >100Hz PF < 0.5 for 5 - 300V, and >100Hz PF ≤ 1 for 5 - 60V
Power Factor	Range	0.000 - 1.000
	Resolution	0.001
	Accuracy	W / VA, Calculated and displayed to three significant digits

Opt.623 Low Range meter Resolution (For 6705 / 6710)

Current (r.m.s)	Range	2.0mA - 350.0mA	-	-	-
	Resolution	0.1mA	-	-	-
	Accuracy	$\pm (0.6\% \text{ of reading} + 5\text{counts})$ at Voltage > 5V $\pm (1\% \text{ of reading} + 5\text{counts})$ at Voltage > 5V (Option 0 - 600V)	-	-	-
Power	Range	0.20W - 35.00W	-	-	-
	Resolution	0.01W	-	-	-
	Accuracy	$\pm (1\% \text{ of reading} + 10 \text{ counts})$ at Voltage > 5V	-	-	-

GENERAL

Surge / Drop	SD-Volt : 0.0 - 300.0V, Resolution : 0.1V SD-Site : 0 - 20mS at SD-Cont. : ON, 0 - 99mS at SD-Cont. : OFF, Resolution : 1mS SD-Time : 0 - 20mS at SD-Cont. : ON, 0 - 99mS at SD-Cont. : OFF, Resolution : 1mS SD-Cont. : ON / OFF
Remote Input Signal Interface (Option)	Test, Reset, Recall memory 1 through 7
Remote Output Signal	Pass, Fail, Test-in Process
Memory	50 memories, 9 steps/memory
Sync Output Signal	Output Signal 10V, BNC type, Between the sync signal and the output voltage will be 0.5ms time difference
Timer	0=Continuous, 0.1 - 999.9 (Unit: sec, minute, hour selectable)
Alarm Volume Setting	Range: 0 - 9; 0=OFF, 1 is softest volume, 9 is loudest volume
Graphic Display	240 x 64 dot resolution Monographic LCD / Contrast 9 Levels 1 - 9
Auto loop cycle	By step or memory, or system loop cycle setting. 0=Continuous, OFF, 2 - 9999
Over Current Fold Back	On/Off, Setting On when output current over setting A-Hi value it will fold back output voltage to keep constant output current is setting A-Hi value

Efficiency	$\geq 40\%$ (at Full Load)				
Protection	Over Current, Short Circuit, Over Temperature, Over Voltage, Over Power, Low Voltage and Alarm				
Calibration	Front Panel Calibration				
Interface	Standard USB & RS232, Option GPIB, PLC Remote Input Card				
Operation Environment	0 - 40°C / 20 - 80%RH				
Dimension, mm ^{*5}	W	430	430	430	430
	H	89 (111.5)	89 (111.5)	268 (355)	624 (711)
	D	400	560 (588)	650 (730)	650 (730)
Weight	24Kg	39Kg	90Kg	165Kg	192Kg

Product specifications are subject to change without notice

*1 The input voltage is restricted not to be lower than -5% of rated input voltage when output voltages reach >140V at 0 - 150V range & >280V at 0 - 300V range.

The input voltage is restricted not to be lower than -5% of rated input voltage when output voltages reach >280V at 0 - 300V range & >560V at 0 - 600V range. (Option 0 - 600V).

*2 At working voltage 120V / 240V

*3 At working voltage 240V / 480V

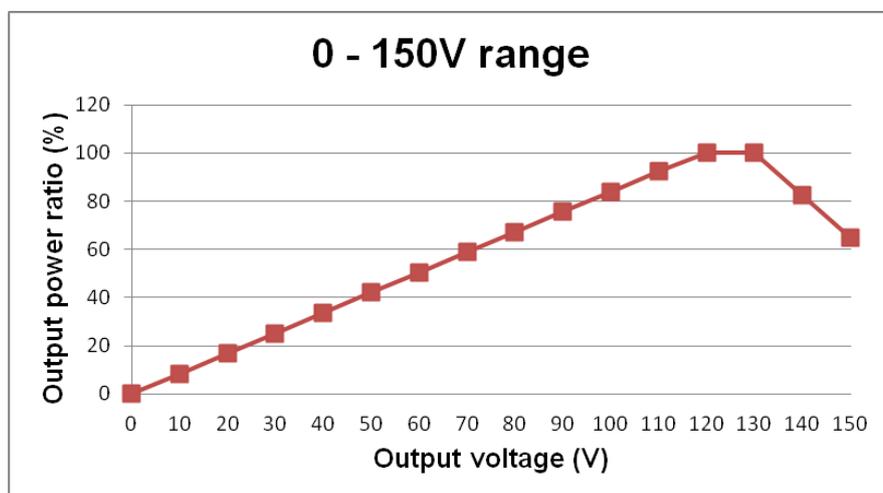
*4 a. When output frequency $\geq 100\text{Hz}$ & $\leq 500\text{Hz}$ & N-G short, the current meter guarantee minimum current from 0.010A

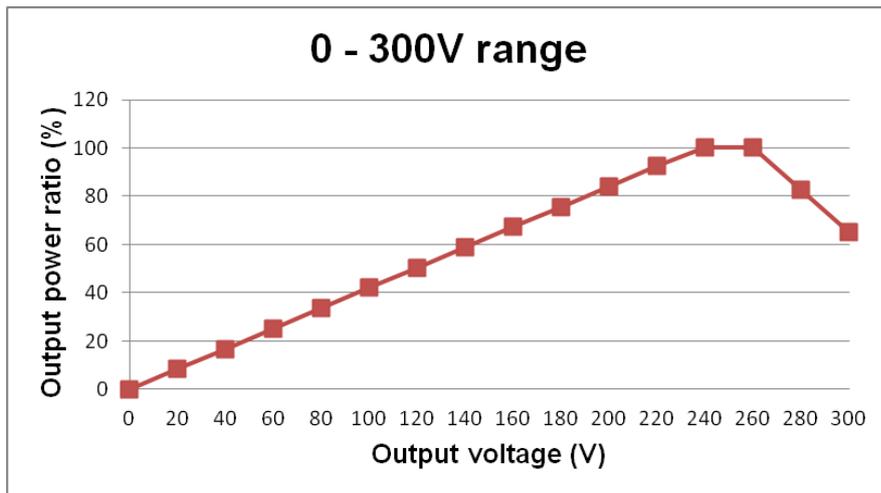
b. When output frequency $\geq 500\text{Hz}$ & N-G short, the current meter guarantee minimum current from 0.020A

c. When output frequency $\geq 100\text{Hz}$ & $\leq 500\text{Hz}$ & N-G short, the current meter guarantee minimum current from 0.020A at 600V models.

d. When output frequency $\geq 500\text{Hz}$ & N-G short, the current meter guarantee minimum current from 0.030A at 600V models

*5 Figure in parentheses are maximum values

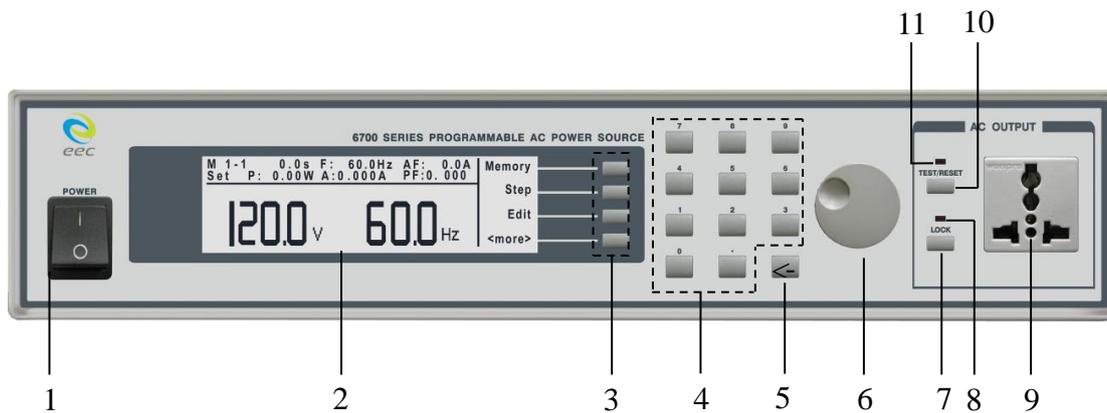




【Ordering Information】

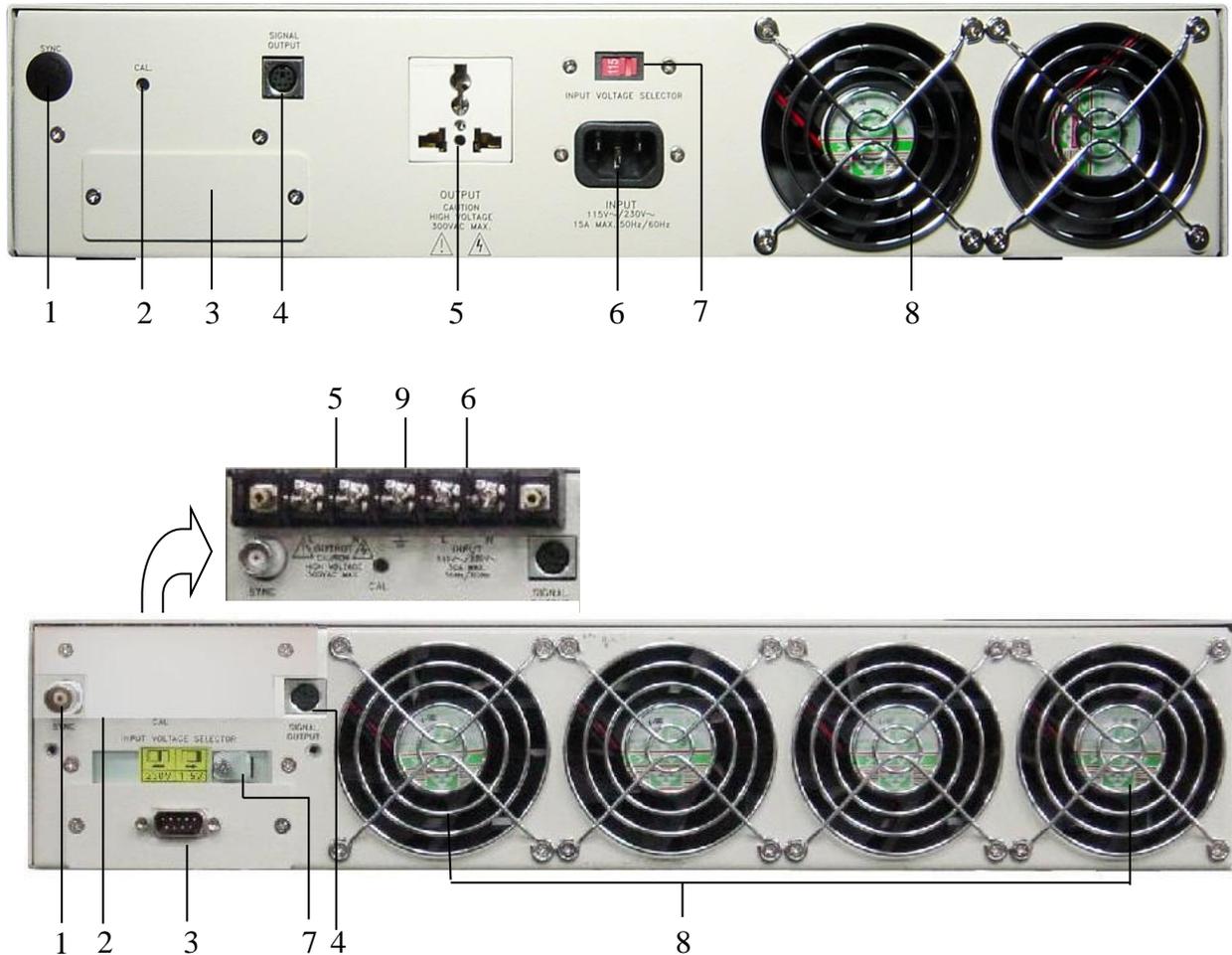
- 6705 Linear Programmable AC Power Source 0 - 300V / 45 - 500Hz (500VA)
- 6710 Linear Programmable AC Power Source 0 - 300V / 45 - 500Hz (1000VA)
- 6720 Linear Programmable AC Power Source 0 - 300V / 45 - 500Hz (2000VA)
- 6730 Linear Programmable AC Power Source 0 - 300V / 45 - 500Hz (3000VA)
- 6740 Linear Programmable AC Power Source 0 - 300V / 45 - 500Hz (4000VA)
- Opt.612 PLC Remote I/P Interface
- Opt.623 Low Range meter Resolution 0.1mA / 0.01W for 6705 & 6710
- Opt.624 Output 0 - 600V
- Opt.625 Output Frequency 45.0 - 1000Hz
- Opt.627 GPIB Interface card
- Opt.655 Sync Signal +5V/pulse 15ms
- 1936 AC Power Source Remote Controller

3.2 Front Panel Description



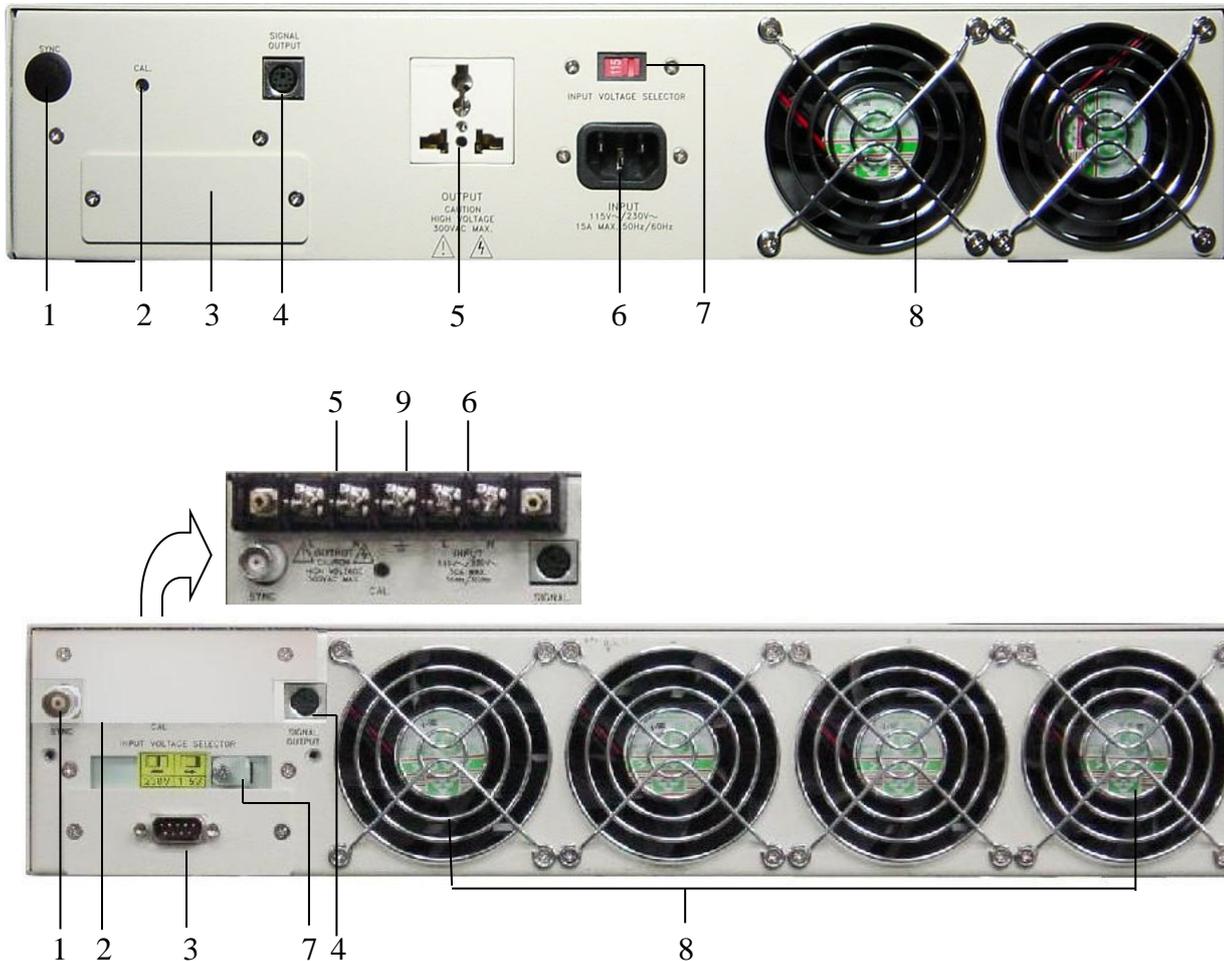
1. **POWER SWITCH:** Rocker style power switch with international ON (|) and OFF (0) markings.
2. **GRAPHIC LCD:** 240 X 64 Monographic LCD.
3. **SOFT KEYS:** Multifunction parameter selection keys. Keys used to select screens and change parameters.
4. **NUMERIC DATA ENTRY:** Keys used to enter numeric data.
5. **Delete Key :** If you make a mistake or want to change the character, press the Delete key to delete the last character.
6. **ROTARY KNOB:** Adjust the value of all parameters.
7. **LOCK Key.** To disable all the keys on the front panel (ON/OFF) and to escape from programmable operation mode.
8. **LOCK Indicator.** When this LED is lighting, all the keys are disabled.
9. **Universal Ac Output Socket:** Output Socket (15A).
10. **TEST/RESET Key.** To turn the output ON and OFF and press the key when abnormal operation occurs.
11. **TEST/RESET Indicator :** When this LED is lighting, the output voltage is turned ON.

3.3 Rear Panel Description



1. **SYNCHRONISM SINGAL SCKOKET:** BNC Socket. When the test is enable, it will output a 10V voltage signal at the same time from the socket.
2. **CALIBRATION ENABLE KEY:** To enter the calibration mode press this key while the instrument voltage is being powered ON.
3. **INTERFACE PORT:** Optional connector for interconnection to the PLC Remote of TEST , RESET functions and program memory selection 1~7. Or optional RS-232 Bus interface and IEEE 488 interface may be selected.
4. **PLC REMOTE OUTPUT:** Connector for monitoring PASS, FAIL and PROCESSING output signals.
5. **OUTPUT L/N TERMINAL / UNIVERSAL AC OUTPUT SOCKET:** Output Socket (15A) for 6705 or output L/N terminal for 6710.

Rear Panel Description



6. INPUT SUPPLY TERMINAL / INPUT POWER RECEPTACLE: Standard IEC 320 connector for connection to a standard NEMA style line power (mains) cord for 6705. Or input supply terminal for 6710.

7. INPUT POWER SWITCH: Line voltage selection is set by the position of the switch. In the left position, it is set for 115-volt operation, in the right position it is set for 230-volt operation.

8. THERMAL FAN: To cool the instrument.

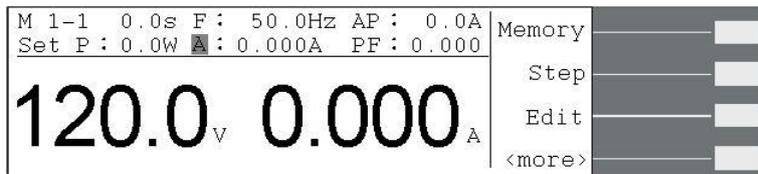
9. GROUND TERMINAL : Common Ground terminal for Input and Output.

CHAPTER 4. OPERATION DESCRIPTION

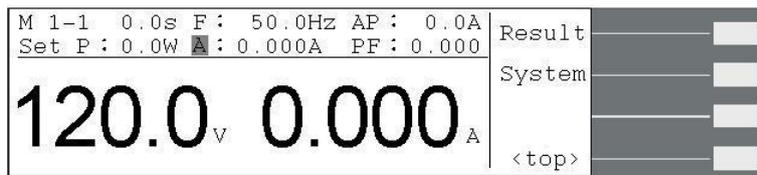
4.1 Power On

Turn on the POWER switch located on the lower left-hand side of the front panel, and the initialization screen will appear as follows:

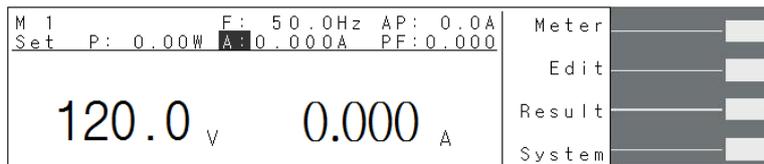
After a few seconds the initialization screen will change to the Set screen. The Set screen will be displayed as follows when in PROGRAM Mode:



If you press the <more> soft key within the Set screen, the soft keys will change to include Result, System, and <top> in the PROGRAM Mode.



If you are in MANUAL Mode there will not be a step number 1 next to the M 1 and the set screen will appear as follows:



4.1.1 Description of the parameters

If the instrument is under reset condition, follow parameters show the setting value. But if the instrument is under test condition, the parameters show the output value.

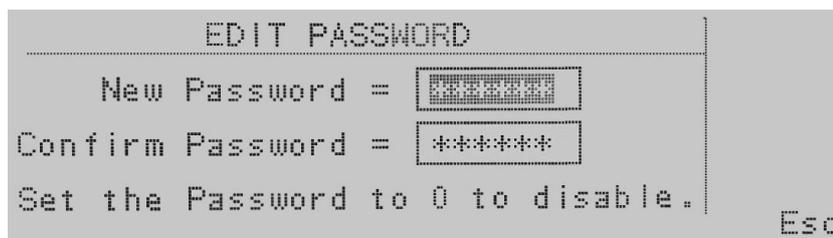
Set Screen Parameters	Description of Parameters
M 1-1	Memory and step number .
0.0s	Dwell time.
F: 50.0Hz	Output Frequency.
AP: 0.0A	Peak current.
Set	Display for present condition. It could be the “Set”, “Dwell”, “Pass”, “Abort” or others fail condition. For example, if it is under test condition and it will shows “Dwell”.
P: 0.0W	Output Power.
A: 0.000A	Output Current.
PF: 0.000	Power Factor.
Memory	Memory soft key used to change memory location
120.0V(Left meter reading)	Meter for voltage
0.00A(right meter reading)	Meter for parameters of F, Ap, P, A & PF

4.1.2 Security

Creating a Password

Creating a password prevents unauthorized access to the Lock parameters in the System menu. Once a password has been created, lock functions will require the password to access them.

Press and hold the <top> soft key while powering up the instrument, the Edit Password screen should now be displayed. The display will appear as follows:



You may now type in the new password using the numeric keypad. Press the Enter key to accept the new password or press the Esc key to escape. After you type in your new password, you will be required to confirm your new password by typing it again into the “Confirm

Password” field. Press the Enter key to confirm the new password or press the Esc key to escape.

If the password is set to 0, the Lock and Mem Lock parameters may be accessed by editing Lock and Mem Lock soft keys in the System Parameters menu. In this case, the key lockout on the front panel is enabled by pressing the Lock button.

If the password has been set to anything but 0, a password entry pop-up screen will appear to access the Lock and Mem Lock parameters as well as key lockout on the front panel of the unit. The password default is preset to 0 at the factory.

Forgotten Password

If you have forgotten your password, a new password should be entered or enter “0” to disable the password. The old password cannot be recovered.

Secure Lock and Mem Lock Access

If a password has been created, when you press the Lock or Mem Lock soft key or the key lockout on the front panel, a password pop-up screen will appear. The pop-up message will appear as follows:



In order for you to access the Lock or Mem Lock parameters, you will now have to enter the proper password. If you have forgotten the password, please refer to the Forgotten Password instructions in the Security section.

4.1.3 Lock

From the Set screen press the <more> soft key. Press the System soft key. Use the ù, ú soft keys to navigate to the Lock parameter. When the Lock parameter is highlighted, you may turn the function ON and OFF by pressing the Change soft key. Press the Enter key to accept the new setting or the Esc key to cancel and return to the original setting. When the Enter key is pressed, the new security setting will take immediate effect.

Selecting Lock “ON” restricts access to parameter and system settings. The level of security is determined by the Mem Lock function.

4.1.4 Mem Lock

From the Set screen press the <more> soft key. Press the System soft key. Use the ù, ú soft keys to navigate to the Mem Lock parameter. When the Mem Lock parameter is highlighted, you may turn the function ON and OFF by pressing the Change soft key. Press the Enter key to accept the new setting or the Esc key to cancel and return to the original setting.

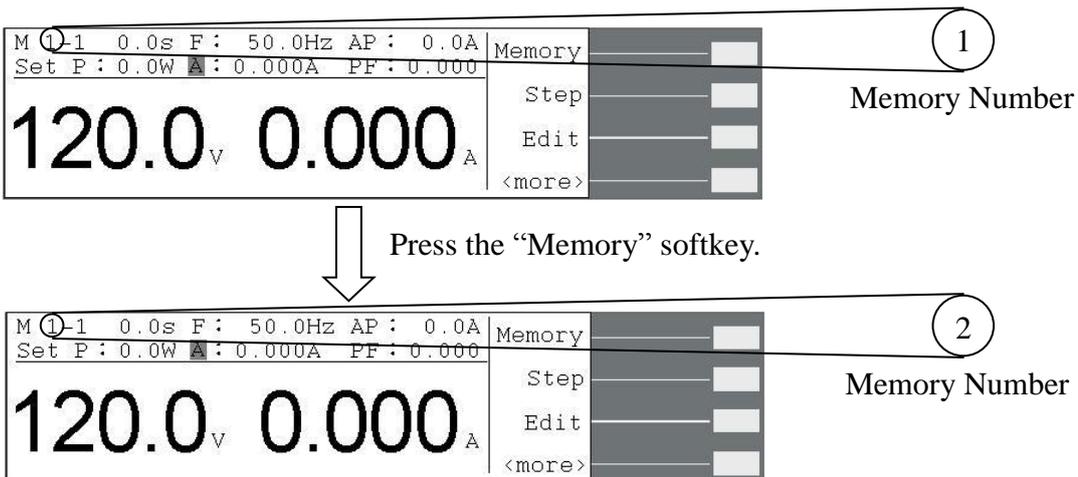
Mem Lock is a sub-function of the Lock setting. In order for the Mem Lock function to work, the Lock must first be turned ON. Selecting the Mem Lock OFF will allow the user to access all available memory locations but restricts access to memory and step editing capabilities. Selecting the Mem Lock ON will allow the user to only run the currently loaded memory.

4.2 Description of the Softkeys

There are five softkeys for selection, and they are: “Memory”, “Step”, “Edit”, “Result” and “System”.

4.2.1 Memory Softkey

The softkey is for memory fast selected under reset condition. The display will show further number if press “Memory” softkey one time.



4.2.2 Step Softkey

The softkey is for step fast selected under reset condition. The display will show further number if press “Step” softkey one time.

Step Number

Press the “Step” softkey.

Step Number

4.2.3 Edit Softkey

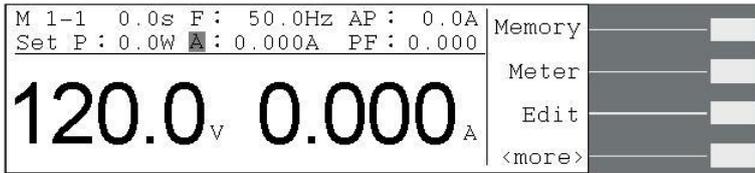
Press “Edit” softkey under the reset condition which is under the setting of Auto Run is “Program” and ”Surge/Drop” is “ON”, then display will show as follows.

Press “Edit” softkey.

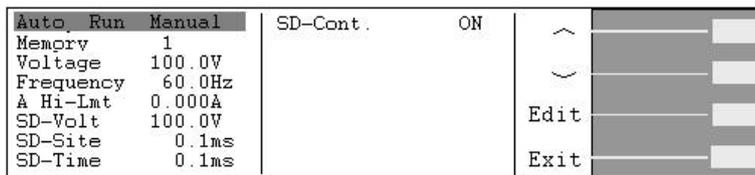
Auto Run Program	P Hi-Lmt	0.0W	Memory	
Memory Cycle 1	P Hi-Lmt	0.0W	Step	
Memory 1	AP Hi-Lmt	0.0A	Edit	
Step 1	AP Lo-Lmt	0.0A	<more>	
Voltage 100.0V	PF Hi-Lmt	0.000		
Frequency 60.0Hz	PF Lo-Lmt	0.000		
A Hi-Lmt 0.000A	Ramp Up	0.1s		
A Lo-Lmt 0.000A	<more>			

Delay 0.1s	Connect	OFF		
Dwell 0.1s				
SD-Volt 100.0V				
SD-Site 0.1ms				
SD-Time 0.1ms				
SD-Cont. ON				
Prompt				
Step Cycle 1				

Press “Edit” softkey under the reset condition which is under the setting of Auto Run is “Manual” and ”Surge/Drop” is “ON”, then display will show as follows.



↓ Press "Edit" softkey.



Remark:

1. If the setting of Surge/Drop is "OFF", the display will not show the test parameters : "SD-Volt", "SD-Site" and "SD-Time".
2. Please refer to section 4.2.3.2 for Test parameters "Auto Run". and section 4.2.5 for the System parameter "Surge/Drop".

There are four softkeys under the display, and they are " ^ ", " ~ ", "Edit" and "Exit".

" ^ " : Back to last parameter.

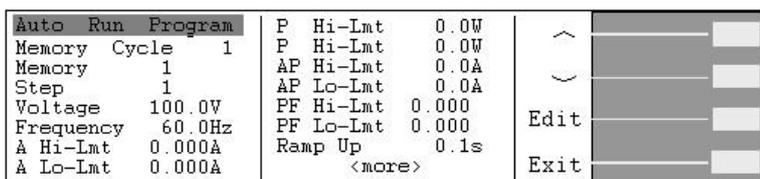
" ~ " : Forward to next parameter.

"Edit" : Parameter edit function.

"Exit" : Exit the edit display and back to reset display.

4.2.3.1 Enter the Test Parameters Editing Mode

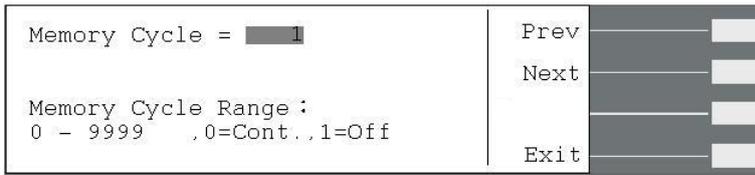
Please press "Edit" to edit the test parameters under Edit display.



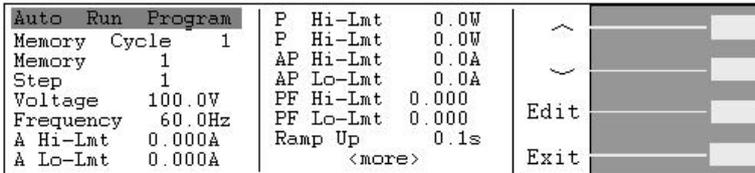
↓ Press "Edit" softkey.



↓ Press "Next" softkey.



Or you can press ”^” or ”~” softkey to select the parameter you want to edit first, then press ”Edit” softkey to edit it.



Press ”^” softkey.



Press ”Edit” softkey.

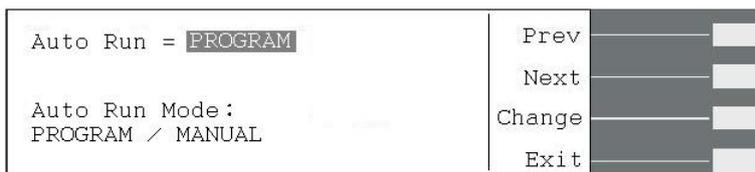


Use numeric keypad to enter the new number or pressing “Change” softkey to change the parameter mode.

4.2.3.2 Editing Test Parameter

Auto Run Mode Selection

When the parameter “Auto Run” is selected, the display will show as follows.

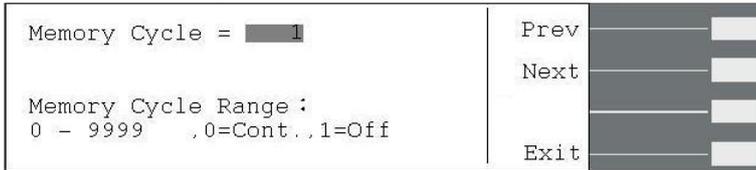


Setting “Manual”, just these parameters “Memory”, “Voltage”, “Frequency”, “A Hi-Lmt”, “SD-Volt”, “SD-Site” and “SD-Time” will be enables.

Setting “**Program**”, besides above parameters, and “Memory Cycle”, “Step”, “A Lo-Lmt”, “AP Hi-Lmt”, “AP Lo-Lmt”, “P Hi-Lmt”, “P Lo-Lmt”, “PF Hi-Lmt”, “PF Lo-Lmt”, “Ramp Up”, “Delay”, “Dwell”, “Prompt”, “Step Cycle” and “Connect” will be enabled.

Memory Cycle Setting

When the parameter “Memory Cycle” is selected, the display will show as follows.



Setting of “Cont” means continuous, and “1” is single operation. For “2”~“9999” setting, it becomes the number of sequence to be repeated for running operation. (Refer to section 4.2.4.2 for Loop Cycle Setting)

Selecting a Memory

When the parameter “Memory” is selected, the display will show as follows.

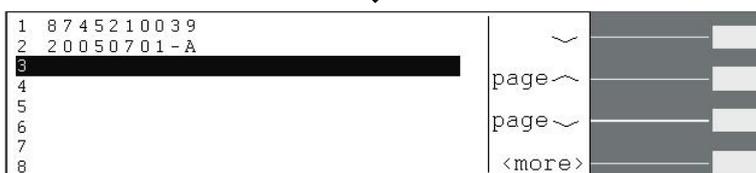


Two methods may be used to select a Memory.

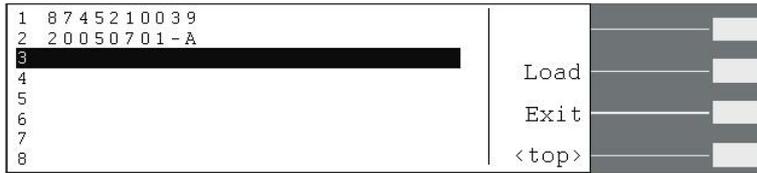
1. Type in the number of the Memory that you would like to use. As with all of the parameters, once you begin typing a new number, the parameter will blank and the cursor will begin blinking. This indicates that the parameter is being edited. Once a parameter is edited, it is necessary to complete the edit either by pressing the ENTER key to accept the new number or the EXIT key to escape from the edit and return to the original number.
2. Press the “List” soft key and scroll the highlighted area to the desired Memory, then press the ENTER key. An example of the list display is as follows:



Press “List” softkey.



↓ Press <more> softkey.



Once you press the ENTER key, the Memory location and all of its steps will be loaded into the instruments activate memory for use. Once the Memory is loaded, the Perform Test screen will once again be displayed.

Naming a Memory

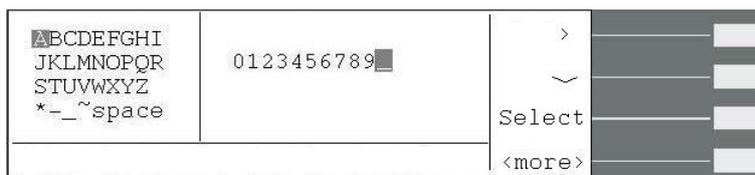
At the Memory recall screen, press the “Name” soft key.



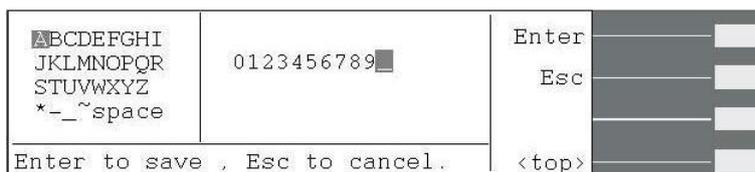
↓ Press ”<more>” softkey.



↓ Press “Name” softkey.



↓ Press ”<more>” softkey.



Use the “< >, ^, v” soft keys to navigate through the character map and use the bottom soft key to select a character. The”←-” key may be used to delete the last character. Press ENTER to save or EXIT to cancel changes. The memory name can be no more than 10 characters in length.

Selecting a Step

When the parameter “Step” is selected, the display will show as follows.

Step = <input type="text" value="1"/>	Prev <input type="button" value=""/>
Step Range : 1 - 9	Next <input type="button" value=""/>
	Exit <input type="button" value=""/>

Type in the number of the Step that you would like to use. Once a parameter is edited, it is necessary to complete the edit either by pressing the ENTER key to accept the new number or the EXIT key to escape from the edit and return to the original number.

Setting of Output Voltage

When the parameter “Voltage” is selected, the display will show as follows.

Voltage = <input type="text" value="100.0V"/>	Prev <input type="button" value=""/>
Voltage Range : 0.0 - 300.0V	Next <input type="button" value=""/>
Voltage Mode : <input type="text" value="AUTO"/>	Change <input type="button" value=""/>
Voltage Mode : HIGH / AUTO	Exit <input type="button" value=""/>

Setting the voltage mode to be “AUTO”, the system will auto judge the voltage range from the setting value of voltage.

Setting the mode to be “HIGH”, the voltage range is always set to be high range, and the range of current limit drops to half as comparing the current limit at the low range (Refer to the specification table). Setting of voltage range may not influence the existing output voltage setting.

Setting of Output Frequency

When the parameter “Frequency” is selected, the display will show as follows.

Frequency = <input type="text" value="60.0Hz"/>	Prev <input type="button" value=""/>
Frequency Range : 45.0 - 500Hz	Next <input type="button" value=""/>
	Exit <input type="button" value=""/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Current High Limit and Low limit

When the parameter “A Hi-Lmt” is selected, the display will show as follows.

A Hi-Lmt = 0.000A	Prev	<input type="checkbox"/>
Current High Limit Range : 0.000 - 8.400A ,0=OFF	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

When the parameter “A Lo-Lmt” is selected, the display will show as follows.

A Lo-Lmt = 0.000A	Prev	<input type="checkbox"/>
Current Low Limit Range : 0.000 - 8.400A	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting Range of Voltage

Model	6705	6710	6720	6730	6740	6750
0-150V (A)	0.000-4.200	0.000-8.40	0.000-16.80	0.000-25.20	0.000-33.60	0.000-42.00
0-300V (A)	0.000-2.100	0.000-4.20	0.000-8.40	0.000-12.60	0.000-16.80	0.000-21.00
OPT.624(0-600V)						
0-300V (A)	0.000-2.100	0.000-4.20	0.000-8.40	0.000-12.60	0.000-16.80	0.000-21.00
0-600V (A)	0.000-1.050	0.000-2.100	0.000-4.20	0.000-6.30	0.000-8.40	0.000-10.50

Note. If the setting value of high limit is 0, the function will be displayed.

Setting of Power High Limit and Low Limit

When the parameter “P Hi-Lmt” is selected, the display will show as follows.

P Hi-Lmt = 0.0W	Prev	<input type="checkbox"/>
Power High Limit Range : 0.0 - 1000W ,0=OFF	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

When the parameter “P Lo-Lmt” is selected, the display will show as follows.

P Lo-Lmt = 0.0W	Prev	<input type="checkbox"/>
Power Low Limit Range : 0.0 - 1000W	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

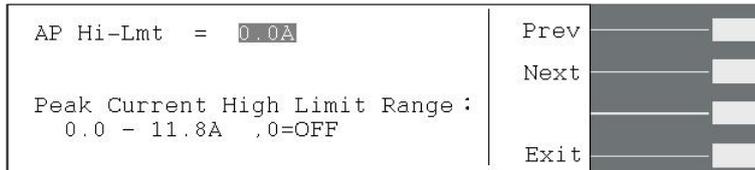
Setting Range of Power

Model	6705	6710	6720	6730	6740	6750
Power(W)	0.0-500	0.0-1000	0.0-2000	0.0-3000	0.0-4000	0.0-5000

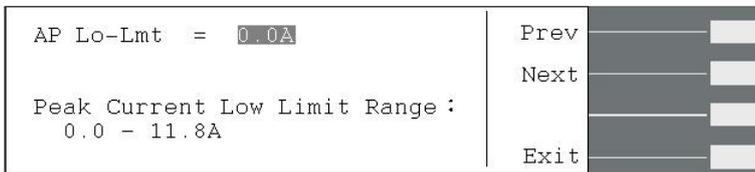
Note. If the setting value of high limit is 0, the function will be displayed.

Setting of Peak Current High Limit and Low Limit

When the parameter “AP Hi-Lmt” is selected, the display will show as follows.



When the parameter “AP Lo-Lmt” is selected, the display will show as follows.



Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

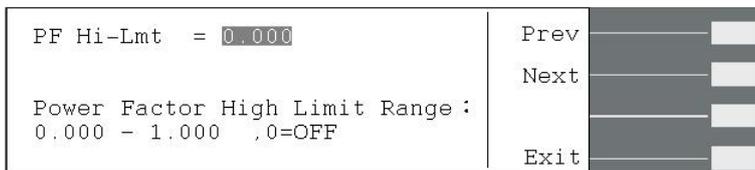
Setting Range of Peak Current

Model	6705	6710	6720	6730	6740	6750
Current(A)	0.0-5.9	0.0-11.8	0.0-23.7	0.0-35.6	0.0-47.5	0.0-59.3
OPT.624(0-600V)	0.0-2.9	0.0-5.9	0.0-11.8	0.0-17.8	0.0-23.7	0.0-29.6

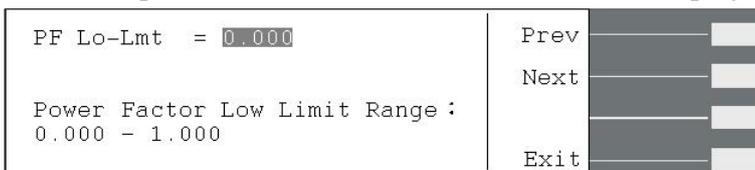
Note. If the setting value of high limit is 0, the function will be displayed.

Setting of Power Factor High Limit and Low Limit

When the parameter “PF Hi-Lmt” is selected, the display will show as follows.



When the parameter “PF Lo-Lmt” is selected, the display will show as follows.



Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting. Note. If the setting value is 0, the function will be displayed.

Setting of Ramp Up Time

When the parameter “Ramp Up” is selected, the display will show as follows.

Ramp Up = 0.1S	Prev	<input type="checkbox"/>
Ramp Up Time Range: 0.1 - 999.9S	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Delay Time

When the parameter “Delay” is selected, the display will show as follows.

Delay = 0.1S	Prev	<input type="checkbox"/>
Delay Time Range: 0.1 - 999.9S	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Dwell Time

When the parameter “Dwell” is selected, the display will show as follows.

Dwell = 0.1S	Prev	<input type="checkbox"/>
Dwell Time Range: 0.1 - 999.9S , 0=Constant	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting. Setting 0 is continuing test till test fail or abort.

Setting of Surge / Drop Voltage

When the parameter “SD-Volt” is selected, the display will show as follows.

SD-Volt = 100.0V	Prev	<input type="checkbox"/>
Surge/Drop Voltage Range: 0.0 - 300.0V	Next	<input type="checkbox"/>
	Exit	<input type="checkbox"/>

The function is setting it belongs to surge or drop. Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Surge / Drop Site

When the parameter “SD-Site” is selected, the display will show as follows.

SD-Site = 0.1mS	Prev	<input type="button" value=""/>
Surge/Drop Site Range: 0.1 - 99.9mS	Next	<input type="button" value=""/>
	Exit	<input type="button" value=""/>

The function is setting the location of Surge / Drop. Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Surge / Drop Time

When the parameter “SD-Time” is selected, the display will show as follows.

SD-Time = 0.1mS	Prev	<input type="button" value=""/>
Surge/Drop Pulse Width Range: 0.1 - 25.0mS	Next	<input type="button" value=""/>
	Exit	<input type="button" value=""/>

The function is setting the puls width of Surge / Drop. Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

Setting of Surge / Drop Continuous Test

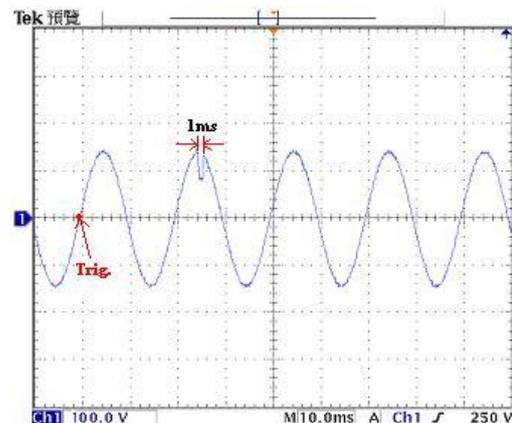
When the parameter “SD-Cont.” selected, the display will show as follows.

SD-Cont. = OFF	Prev	<input type="button" value=""/>
Surge/Drop Trig Mode: ON / OFF	Next	<input type="button" value=""/>
	Change	<input type="button" value=""/>
	Exit	<input type="button" value=""/>

The function is setting if Surge/Drop output is continuous or not. When the function is setting to “ON”, the trigger will be activated continuously until the test is fail or reset after “Trig.” softkey is pressed. When the setting is “OFF”, the trigger will only activated a time after “Trig.” softkey is pressed.

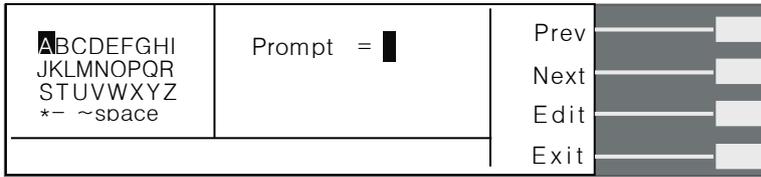
For an example, If output voltage is 100Vrms, output frequency is 50Hz , Surge/Drop voltage is 60Vrms, Surge/Drop site is 25mS, and Surge/Drop time is 1mS.

If the SD-Cont. is setting to “OFF” and the “Trig.” softkey is only pressed a time, the waveform will be as the right figure.

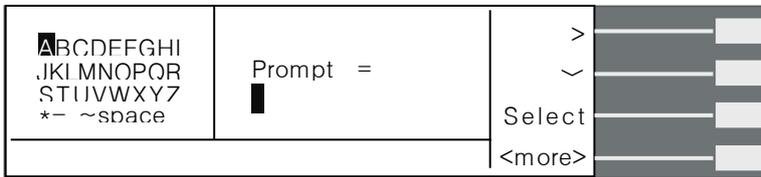


Setting of Prompt

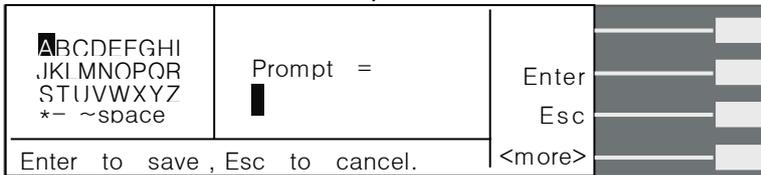
When the parameter “Prompt” is selected, the display will show as follows.



The Prompt function allows you to insert a short line of text in a step. The Prompt will appear on the screen before the step is initiated and remains on the screen until the TEST button is pressed. After the TEST button is pressed, the Prompt will clear and the step will initialize.



Press "<more>" Softkey.

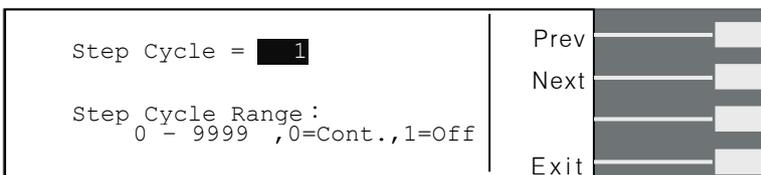


This screen will only show when scrolling one parameter at a time through the parameter list with “Prev and Next” soft keys. Press the “Edit” soft key to Edit or insert a Prompt.

To enter a text prompt, use the arrow keys to scroll the highlighted area to the character (or enter a number from the numeric keypad) you wish to use and then press the “Select” soft key, the letter or symbol will be inserted at the point where the cursor is flashing. The cursor will then increment to the next position and wait for an additional character insertion. If you make a mistake or want to change the character, press the delete key in the numeric keypad. The cursor will decrement and erase the character. When you have finished editing the prompt press the ENTER key. The prompt can be no more than 10 characters in length.

Setting of Step Cycle

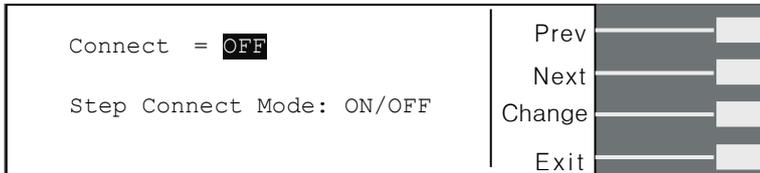
When the parameter “Step Cycle” is selected, the display will show as follows.



Setting of “Cont” means continuous, and “1” is single operation. For “2”~“9999” setting, it becomes the number of sequence to be repeated for running operation. (Refer to section 4.2.4.2 for Loop Cycle Setting)

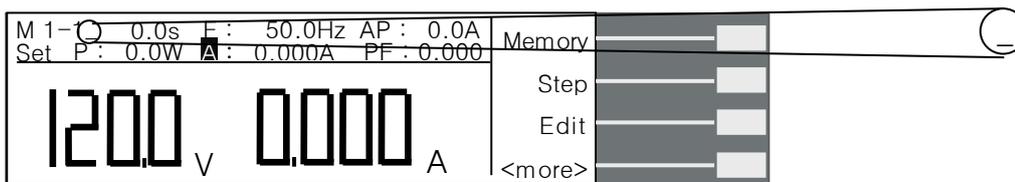
Setting of Step Connect

When the parameter “Connect” is selected, the display will show as follows.



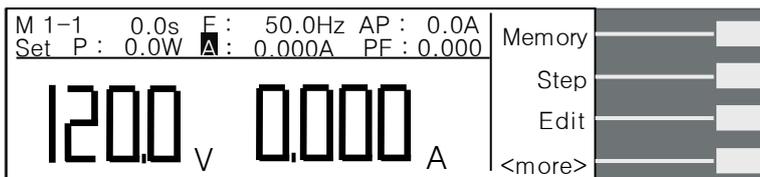
This function when turned ON will connect or link the step to the next step. When step 9 connect is turned “ON”, it will be linked to the first step of the next memory. For example, memory 1, step 9 will be connected to memory 2, step1. It is possible to connect all 450 steps together when the connect parameter of all steps has been turned “ON”.

If the step connect is turned “ON”, the display will show as follows.

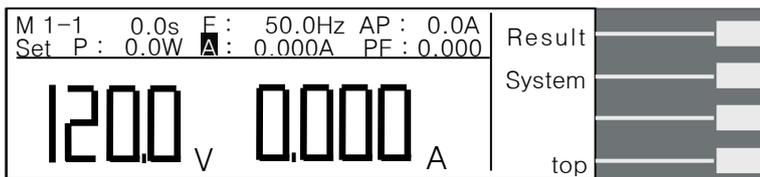


4.2.4 Results Softkey

Press “<more>” softkey under the reset condition, then display will show as follows.



↓ Press “<more>” softkey.



↓ Press “Result” software.

1- 1P	Pass			∨	
1- 2P					
1- 3P	Setting	Results		Page∧	
1- 4P	120.0V	119.9V			
1- 5P	50.0Hz	50.0Hz		Page∨	
1- 6P	0.0W	0.0W			
1- 7P	0.000A	0.000A			
1- 8P	0. 0A	0. 0A		Exit	

or

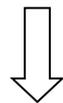
1- 1P	Fail	A-LO		∨	
	Setting	Results			
	120.0V	119.9V		Page∧	
	50.0Hz	0.0Hz			
	0.0W	0.0W		Page∨	
	0.000A	0.003A			
	0. 0A	0. 3A		Exit	

Using the “∨”, “Page∧” or “Page∨” softkeys to review the last test result. If the system is never executed any test, the display will hold on the rest condition after you press the softkey.

4.2.5 System Softkey

Press “<more>” softkey under the reset condition, then display will show as follows.

M 1-1	0.0s	F : 50.0Hz	AP : 0.0A	Result	
Set P :	0.0W	A : 0.000A	PF : 0.000	System	
1200	V	0.000	A		
				top	



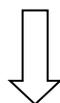
Press “System” softkey.

Single Step	OFF	V Lo-Lmt	0.0V	∧	
Alarm	5	F Hi-Lmt	500.0Hz		
Contrast	5	F Lo-Lmt	45.0Hz	∨	
Auto V-Adj	OFF	Start Angl	0°		
Power UP	OFF	Start Angle	0°	Edit	
Timer Unit	SECOND	Results	LAST		
Loop Cycle	1	Surge/Drop	OFF		
V Hi-Lmt	300.0V	OC Fold	OFF	Exit	

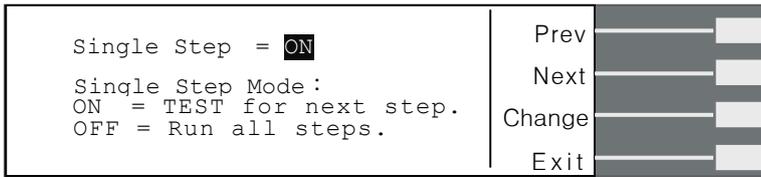
4.2.5.1 Enter the System Setting Mode

Press “Edit” softkey under system mode, then you can enter the setting mode.

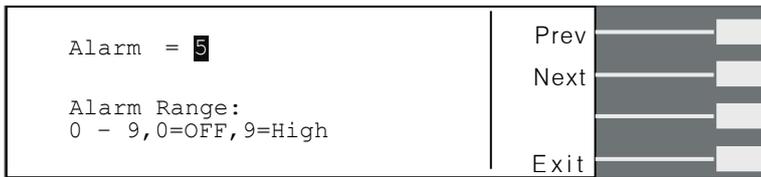
Single Step	OFF	V Lo-Lmt	0.0V	∧	
Alarm	5	F Hi-Lmt	500.0Hz		
Contrast	5	F Lo-Lmt	45.0Hz	∨	
Auto V-Adj	OFF	Start Angl	0°		
Power UP	OFF	Start Angle	0°	Edit	
Timer Unit	SECOND	Results	LAST		
Loop Cycle	1	Surge/Drop	OFF		
V Hi-Lmt	300.0V	OC Fold	OFF	Exit	



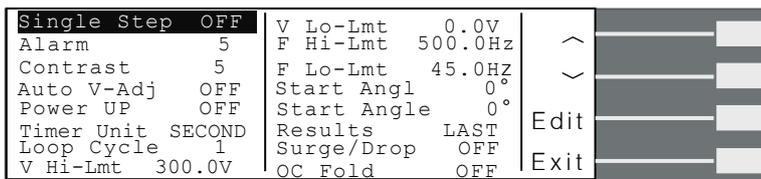
Press “Edit” softkey.



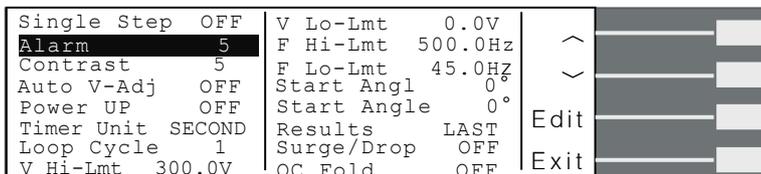
↓ Press "Next" Softkey.



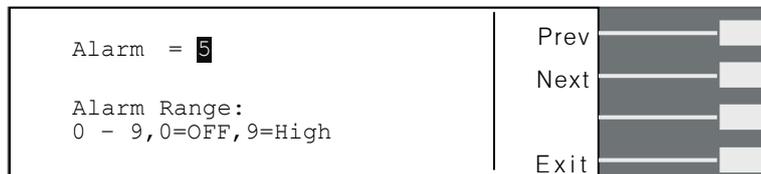
Or you can press "∧" or "∨" softkey to select the parameter you want to edit first, then press "Edit" softkey to edit it.



↓ Press "∧" softkey.



↓ Press "Edit" softkey.

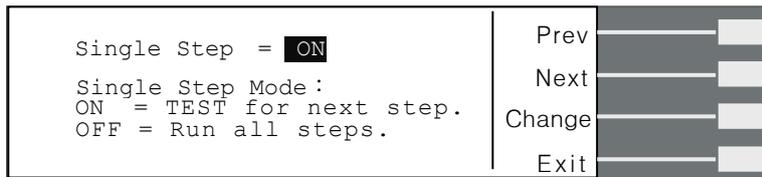


Use numeric keypad to enter the new number or pressing "Change" softkey to change the parameter mode.

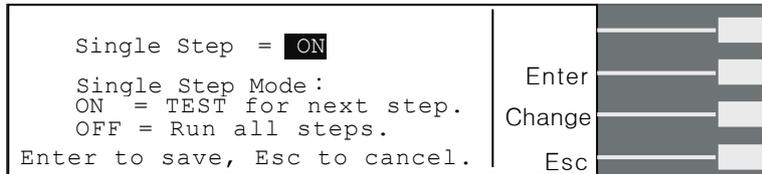
4.2.5.2 System parameter

Single Step

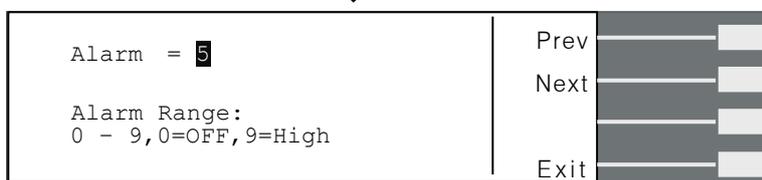
When the parameter is selected, the display will show as follows.



↓ Press "Change" softkey.



↓ Press "Enter" softkey.

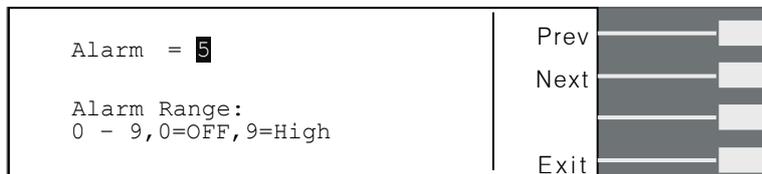


You may turn the Single Step function ON and OFF by pressing the "Change" soft key. Accept the change by pressing ENTER or cancel the edit by pressing EXIT.

This function is used to temporarily override the automatic connection feature. When the Single Step function is ON the instrument will pause after each step is completed. To continue the test sequence, press the Test button to execute the next connected step. Each time the Test button is pressed the next connected step will execute. If you press the Reset button before completing all connected steps, it will return you to the original starting step. If a step fails and you wish to continue to the next step, do not press Reset.

Alarm Volume

When the parameter is selected, the display will show as follows.



To change the volume of the alarm, type in a numeric value between 0 and 9. Press the ENTER key to accept the new number or the EXIT key to escape from the edit and return to the original number.

The numbers corresponding to the different volume settings are 0 through 9, 0 meaning the volume is off, and 9 being the loudest setting. After the number is entered, a momentary alarm chirp will occur to indicate the volume of the new setting.

LCD Contrast

When the parameter is selected, the display will show as follows.

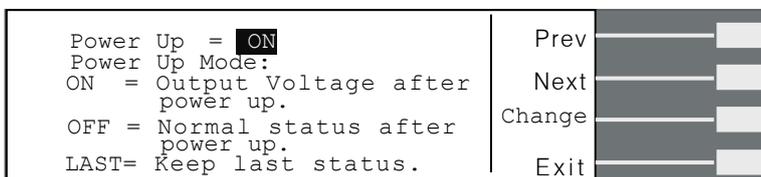


To change the Contrast of the display, type in a numeric value between 0 and 9. Press the ENTER key to accept the new number or the EXIT key to escape from the edit and return to the original number.

The numbers corresponding to the different contrast settings are 0 through 9, 0 meaning the lightest color of displayed characters and 9 meaning the darkest color of displayed characters. After the number is entered, the display will automatically adjust to the new display setting.

Power Up

When the parameter is selected, the display will show as follows.

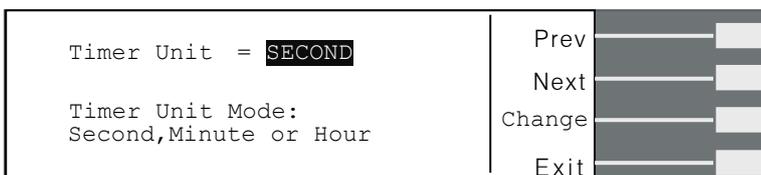


You may turn the function ON, OFF and LAST by pressing the “Change” soft key. Accept the change by pressing ENTER or cancel the edit by pressing EXIT.

When the Power Up function is ON the instrument will auto test after power up. When the Power Up function is OFF the instrument will return the reset condition after power up.. When the Power Up function is LAST the display will show the last output after power up.

Timer Unit

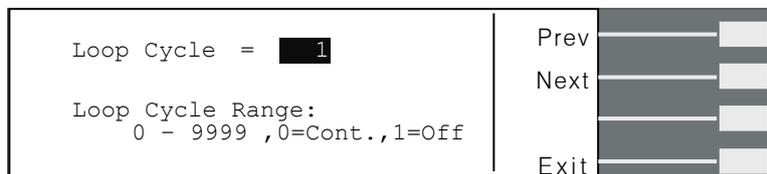
When the parameter is selected, the display will show as follows.



You may turn the function SECOND , Minute and Hour by pressing the “Change” soft key.
Accept the change by pressing ENTER or cancel the edit by pressing EXIT.

Loop Cycle

When the parameter is selected, the display will show as follows.



Setting of “Cont” means continuous, and “1” is single operation. For “2”~“9999” setting, it becomes the number of sequence to be repeated for running operation. This selected loop rate will then be used as a multiplier to the value of step cycle and memory cycle.

For an example, the Loop Cycle is 2,

Memory 1 : Memory Cycle=2

M1-1 : Connect=ON , Step Cycle=2

M1-2 : Connect=ON , Step Cycle=1

M1-3 : Connect=ON , Step Cycle=1

M1-4 : Connect=ON , Step Cycle=3

M1-5 : Connect=ON , Step Cycle=2

M1-6 : Connect=ON , Step Cycle=1

M1-7 : Connect=ON , Step Cycle=1

M1-8 : Connect=ON , Step Cycle=1

M1-9 : Connect=ON , Step Cycle=2

Memory 2 : Memory Cycle=3

M2-1 : Connect=ON , Step Cycle=1

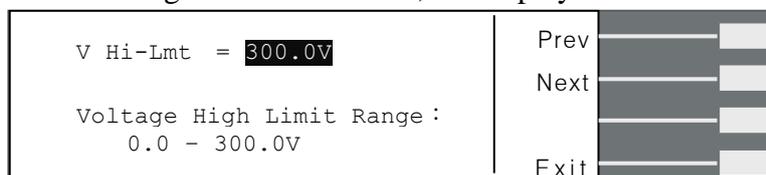
M2-2 : Connect=ON , Step Cycle=3

All the test steps as follows.

M1-1→M1-1→M1-2→M1-3→M1-4→M1-4→M1-4→M1-5→M1-5→M1-6→M1-7→M1-8→M1-9→M1-9→
M1-1→M1-1→M1-2→M1-3→M1-4→M1-4→M1-4→M1-5→M1-5→M1-6→M1-7→M1-8→M1-9→M1-9→
→M2-1→M2-2→M2-2→M2-2 →M2-1→M2-2→M2-2→M2-2 →M2-1→M2-2→M2-2→M2-2

Voltage High Limit and Low Limit

When the High Limit is selected, the display will show as follows.



When the High Limit is selected, the display will show as follows.

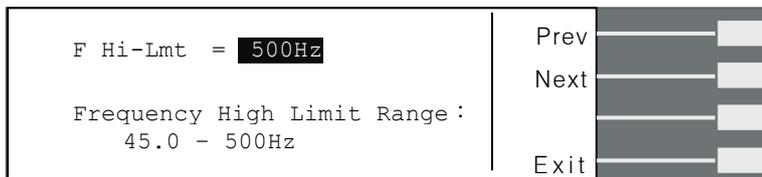


Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

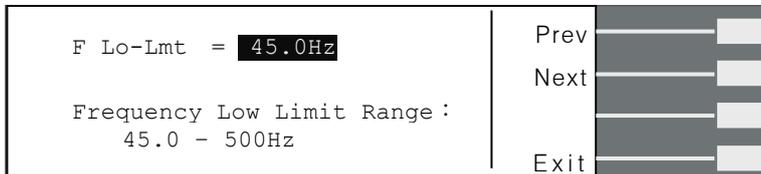
This feature disallows user to vary the output voltage during RESET and TEST conditions, which may cause to exceed the acceptable range of voltage for any particular DUTs.

Frequency High Limit and Low Limit

When the high limit is selected, the display will show as follows.



When the low limit is selected, the display will show as follows.

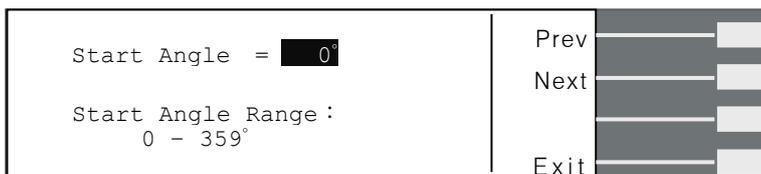


Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

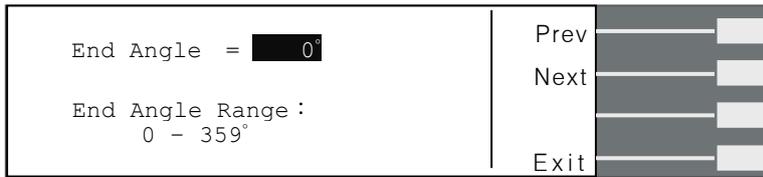
This feature disallows user to vary the output frequency during RESET and TEST conditions, which may cause to exceed the acceptable range of frequencies for any particular DUTs.

Start Angle and End Angle

When the “Start Angle” is selected, the display will show as follows.



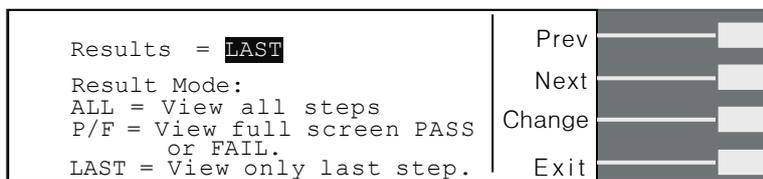
When the “End Angle” is selected, the display will show as follows.



Use numeric key to enter the value then press “Enter” softkey to save and escape the parameter setting.

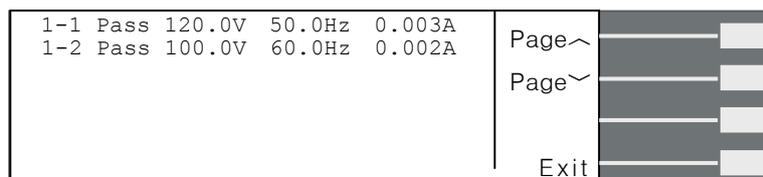
Results

When the parameter is selected, the display will show as follows.



When the Results parameter is highlighted, you may use the “Change” soft key to select what type of results you would preferred displayed at the end of a test or sequence of connected steps. The available selections are: All, P/F and Last. Press the ENTER key to accept the new setting or the EXIT key to cancel and return to the original setting.

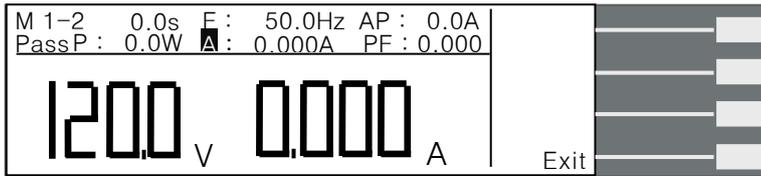
When All is selected, a Results summary screen will be displayed at the end of the test or sequence of connected steps, displaying the results of all of the steps. The Results summary screen will appear as follows:



When P/F is selected, a Pass or Fail screen will be displayed at the end of the test. The Pass and Fail screens will appear as follows:

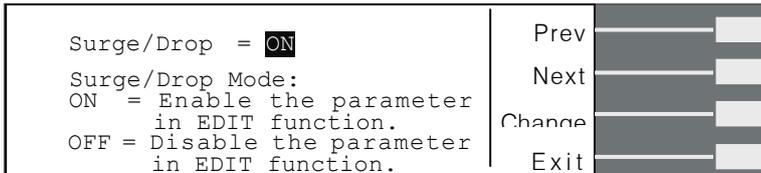


When Last is selected, the results of the last step performed will be displayed on the Perform Tests screen. There will not be a change in appearance or special screen displayed in this mode.



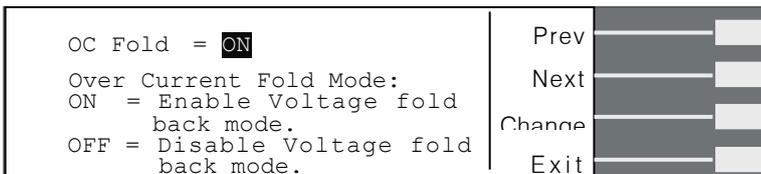
Surge/Drop Mode(Surge/Drop)

Setting on, the test parameter "SD-Volt"、"SD-Site" and "SD-Time" will be enabled. Setting off, the test parameter "SD-Volt"、"SD-Site" and "SD-Time" will be disabled.



Over Current Fold Back (OC-Fold)

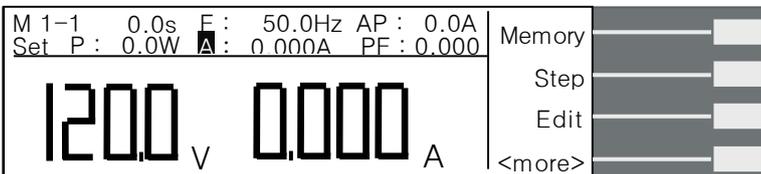
Setting On, when output current is higher than Programmable Parameters "A-HI" current setting current value, it will keep constant A-HI setting current value output.



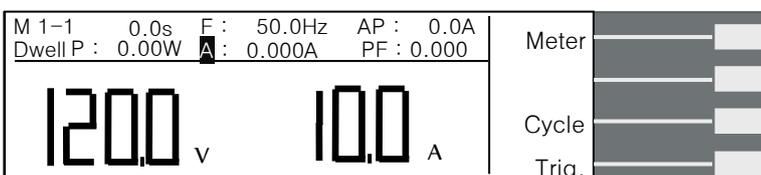
4.3 Description of Test

4.3.1 If the setting of the test parameter "AUTO RUN" is "PROGRAM".

If the setting of the test parameter "AUTO RUN" is "PROGRAM", the Rotary Knob on the panel will be disabled.



When you press "TEST/RESET" key to activate the test, the display will show as follows.

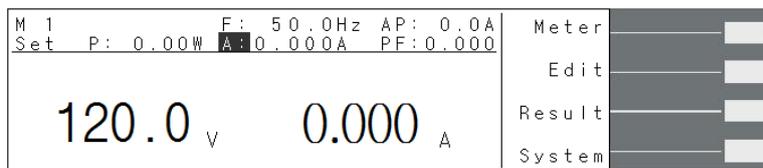


You can monitor the value of Frequency, Peak Current, Power or Power factor by pressing the “Meter” softkey when the test is activating. Or you can monitor the times of Step, Memory and loop cycle by pressing the “cycle” softkey.

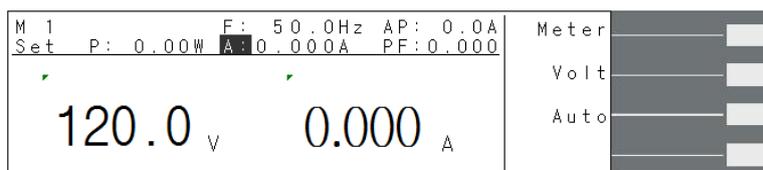
4.3.2 If the setting of the test parameter “AUTO RUN” is ”MANUAL”.

If the setting of the test parameter “AUTO RUN” is ”MANUAL”, the Rotary Knob on the panel will be enabled.

Under reset condition, you can adjust the setting value of voltage, current, Memory or frequency by the Rotary Knob and the display will show as follows.



When you press ”TEST/RESET” key to activate the test, the display will show as follows.



In the meanwhile, you can adjust the output value of voltage or frequency by the Rotary Knob.

Whenever it is under reset condition or testing condition, you can monitor the value of Frequency, Peak Current, Power or Power factor by pressing the “Meter” softkey. Or you can monitor the times of Step, Memory and loop cycle by pressing the “cycle” softkey.

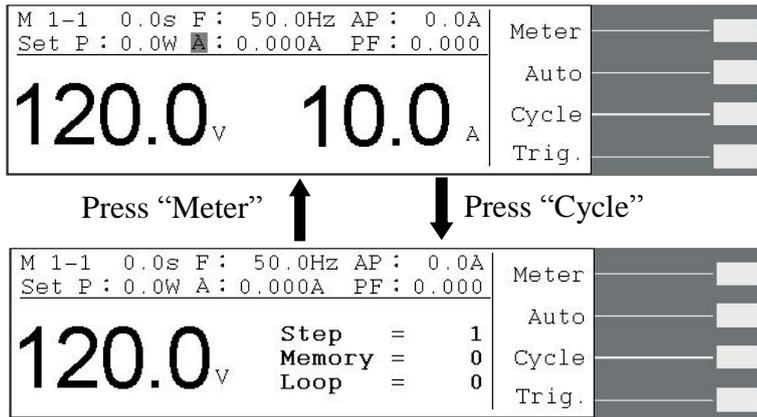
4.3.3 Description of Test Softkeys

“Meter” : You can select the parameter you want to monitor by pressing “Meter” softkey.

“Auto” : It can be set to be ”AUTO” or ”HIGH”.

If the setting is “AUTO” mode, the system will auto judge the voltage mode belongs to low range or high range from the setting value of voltage. If it is “HIGH” mode, it is always set to be high range.

“Cycle” : Monitoring the times of Step, Memory and loop cycle.



“Trig.” : If the setting of system parameter “Surge/Drop” is ON , the softkey will be enabled. After you finished all the set about Surge/Drop function, the trigger can be activated by pressing “Trig.” softkey.

Note. Each trigger must be separated at least 200ms then it can be activated.

4.4 Displayed Messages

Below are the descriptions of error messages that may occur at abnormal conditions: At any abnormal conditions, there are several error messages to be indicated on the display. Thereafter the output will be disabled and the alarm will sound. The TEST/RESET LED Indicator will also light up at the same time. If the indicator is blinking that shows an abnormal operation is encountered, thereby the output voltage will be cut off immediately. By pressing the TEST/RESET key will reset the audible alarm, an error message is indicated.

WARNING

All error messages are occurred at any abnormal conditions and therefore must be recorded. Check the cause of error to ensure the problem is eliminated before restarting the operation, or contact eec or our official distributors for further assistance.

Over Setting Current Protection (HI – A)

If the reading of output current has exceeded the setting of current, the display will indicate “HI-A” and the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

Over Current Protection (OCP)

If the output current has exceeded 110% of full rated current or output circuit short for 1 second, the display will indicate “OCP” and the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

Over Temperature Protection (OTP)

If the heat sink of the instrument itself has exceeded 130 °C, the display will indicate “OTP”. This shows that the heat sink is overheated and thus the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

Over Voltage Protection (OVP)

If the output voltage has exceeded 5V of setting voltage at 0-150V range or has exceeded 10V of setting voltage at 0-300V range, the display will indicate “OVP” and the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

Low Voltage Protection(LVP)

If the output voltage is under 5V of setting voltage at 0-150V range or under 10V of setting voltage at 0-300V range for 0.5 second, the display will indicate “LVP” and the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

Over Power Protection (OPP)

If the output power has exceeded 110% of rating power for 1s or the output power has exceeded 125% of rating power for 0.5s, the display will indicate “OPP” and the alarm will sound. Consequently, the TEST/RESET LED indicator will blink.

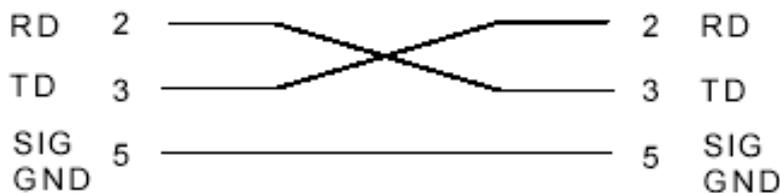
CHAPTER 5. INTERFACE GPIB AND RS-232

Bus Remote Interface RS-232 / GPIB

This chapter provides information on the proper use and configuration of bus remote interface for RS232 and GPIB interface, whereby both interfaces are using different command lists. These interfaces are optional on 6700 Series AC Power Source.

5.1 RS-232 Interface

The RS232 connection is configured as follows for a 9 pins Serial Port interface.



The COM port should have the following configuration: 9600 baud, 8 data bits, 1 stop bit, no polarity, and etc. This interface does not support XON/XOFF protocol or any hardware handshaking. The controller should be configured to ignore the Handshaking Lines DTR (PIN 4), DSR (PIN 6) and RTS (PIN 9). If the port cannot be configured through software to ignore the lines, the handshake lines should be then jumped together in two different sets. The PIN 4 and 6 jumped together while PIN 7 and 8 jumped together at the controller end of the cable.

When sending command over the RS232 bus the AC Power Source will send a response string of 06 Hex or 6 decimal and the Acknowledge (ACK) ASCII control code if the transfer was recognized and completed by the AC Power Source. If there is an error with the command string that is sent, the AC Power Source will respond with 15 Hex or 21 decimal and the Not Acknowledge (NAK) ASCII code. The ACK or NAK response allows for software handshaking, in order to monitor and control data flow. When requesting data from the AC Power Source, it will automatically send the data back to the controller input buffer. The controller input buffer will accumulate data being sent from the AC Power Source including the ACK and NAK response strings, until the controller has read it. When the strings or command has been sent, it must be terminated with **LF=(0AH)**, such as **“TEST”+LF**.

5.2 GPIB Interface

This interface of a device connected to the BUS is specified by its interface functions. These functions provide the means for a device to receive, process, and send messages over the bus. The interface functions are listed in the chart below.

IEEE-488 INTERFACE	Complete Handshake Capability
	Talker/Listener Capability
	Service Request Capability
	No Remote/Local Capability
	No parallel poll Capability
	No Device Clear Capability
	No Device Trigger Capability
	No Controller Capability
	3 state driver
	Setting of test condition and parameters
	Reading of display status
Reading of measurement results	
Controllable Item	Test/Reset Control
DATA CODES	ASCII

GPIBAddress

All the above commands are required by the IEEE-488.2 GPIB Interface BUS. The factory default address of the 6700 Series AC Power Source is set to 8.

5.3 Command List

Basic Commands

Panel Key Page	COMMAND	UNIT	
TEST	TEST	Power On	
RESET	RESET	Power Off	
Testing meters data	TD?	MEMORY,STEP,STATUS,FREQ,VOLT,CUR R,WATT,CURR PEAK,PF,TIMER	
Testing frequency meter	TDFREQ?	45.0~500.0	Hz
Testing voltage meter	TDVOLT?	0.0~300.0	V
Testing current meter	TDCURR?	0.000~42.00	A
Testing current peak meter	TDAP?	0.0~59.0	A
Testing power meter	TDP?	0.0~5000	W
Testing pf meter	TDPF?	0.000~1.000	
Testing timer meter	TDTIMER?	0.0~999.9	s/m/h
SELECT METER X	METER X	X=0-4, 0=FREQ,1=AP,2=POWER,3=CURR,4=PF	
SELECT METER?	METER?		
SURGE/DROP TRIGGER	SDTRG	Trigger one time Surge/Drop	
STEP CYCLE?	STEPCYCLE?		
MEMORY CYCLE?	MEMORYCYCLE?		
LOOP CYCLE?	LOOPCYCLE?		

Program Commands

Program Step Page	COMMAND		UNIT
AUTO:RUN X	AR X	X=0~1, 0=PROGRAM,1=MANUAL	
AUTO:RUN?	AR?	0~1	
MEMORY:CYCLE XXXX	MC XXXX	XXXX=0~9999 ,0=Continue,1=OFF	
MEMORY:CYCLE?	MC?	0-9999	
MEMORY X	MEMORY X	X=1-50	
MEMORY?	MEMORY?	1-50	
STEP X	STEP X	X=1-9	
STEP?	STEP?	1-9	
VOLTAGE XXXX	VOLT XXXX	XXXX=0.0~300.0	V
VOLTAGE?	VOLT?	0.0~300.0	V
RANG X	RANG X	X=0-1, 0=HIGH,1=AUTO	
RANG?	RANG?	0-1	
FREQUENCY XXXX	FREQ XXXX	XXXX=45.0~500	Hz
FREQUENCY?	FREQ?	45.0~500	Hz
A:HI XXXX	AHI XXXX	XXXX=0.000~42.00	A
A:HI?	AHI?	0.000~42.00	A
A:LO XXXX	ALO XXXX	XXXX=0.000~42.00	A
A:LO?	ALO?	0.000~42.00	A
AP:HI XXXX	APHI XXXX	XXXX=0.0~59.0	A
AP:HI?	APHI?	0.0~59.0	A
AP:LO XXXX	APLO XXXX	XXXX=0.0~59.0	A
AP:LO?	APLO?	0.0~59.0	A
POWER:HI XXX.X	PHI XXXX	XXXX=0.0~5000	W
POWER:HI?	PHI?	0.0~5000	W
POWER:LO XXX.X	PLO XXXX	XXXX=0.0~5000	W
POWER:LO?	PLO?	0.0~5000	W
PF:HI X.XXX	PFHI XXXX	XXXX=0.000~1.000	
PF:HI?	PFHI?	0.000~1.000	
PF:LO XXXX	PFLO XXXX	XXXX=0.000~1.000	
PF:LO?	PFLO?	0.000~1.000	
RAMP UP:TIME XXXX	RAMPUP XXXX	XXX.X=0.1~999.9	s
RAMP UP:TIME?	RAMPUP?	0.1~999.9	s
DELAY:TIME XXXX	DELAY XXXX	XXX.X=0.1~999.9	s/m/h
DELAY:TIME?	DELAY?	0.1~999.9	s/m/h
DWELL:TIME XXXX	DWELL XXXX	XXXX=0.0~999.9 ,0=Const	s/m/h
DWELL:TIME?	DWELL?	0.0~999.9	s/m/h
RAMP DOWN:TIME XXXX	RAMPDOWN XXXX	XXX.X=0.1~999.9 OPTION COMMAND	s
RAMP DOWN:TIME?	RAMPDOWN?	0.1~999.9	s
SD-VOLT XXXX	SDVOLT XXXX	XXXX=0.0~300.0	V
SD-VOLT?	SDVOLT ?	0.0~300.0	V
SD-SITE XXXX	SDLT XXXX	XXXX=0.0~99.9	ms
SD-SITE?	SDLT?	0.0~99.9	ms
SD-TIME XXXX	SDHT XXXX	XXXX=0.0~25.0	ms
SD-TIME?	SDHT?	0.0~25.0	ms
SD-CONT XXXX	SDCT XXXX	X=0~1, 0=OFF,1=ON	
SD-CONT?	SDCT?	0~1	
PROMPT:DELETE	PTD		
PROMPT XXXXXXXXXXXX	PT XXXX	XXXX=1~30 BYTES	
PROMPT?	PT?		
STEP:CYCLE XXXX	SC XXXX	XXXX=0~9999 ,0=Cont,1=OFF	
STEP:CYCLE?	SC?	0-9999	
CONNECT X	CONNECT X	X=0~1, 0=OFF,1=ON	

CONNECT?	CONNECT?	0~1	
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System Commands

System Page	COMMAND		UNIT
SINGLE STEP X	SS X	X=0~1, 0=OFF,1=ON	
SINGLE STEP?	SS?	0~1	
ALARM X	ALARM X	X=0~9, 0=OFF,9=high	
ALARM?	ALARM?	0~9	
CONTRAST X	CONTRAST X	X=1~9, 9=high	
CONTRAST?	CONTRAST?	1~9	
POWER:UP X	PUP X	X=0-2,0=OFF,1=ON,2=LAST	
POWER:UP?	PUP?	0-2	
TIME:UNIT X	TUNIT X	X=0-2,0=Second,1=Minute,2=Hour	
TIME:UNIT?	TUNIT?	0-2	
LOOP:CYCLE XXXX	LC XXXX	XXXX=0~9999 ,0=Cont,1=OFF	
LOOP:CYCLE?	LC?	0-9999	
VOLT:HI XXXX	VHI XXXX	XXXX=0.0~300.0	V
VOLT:HI?	VHI?	0.0~300.0	V
VOLT:LO XXXX	VLO XXXX	XXXX=0.0~300.0	V
VOLT:LO?	VLO?	0.0~300.0	V
FREQ:HI XXXX	FHI XXXX	XXXX=45.0~500.0	Hz
FREQ:HI?	FHI?	45.0~500.0	Hz
FREQ:LO XXXX	FLO XXXX	XXXX=45.0~500.0	Hz
FREQ:LO?	FLO?	45.0~500.0	Hz
START ANGLE XXXX	SAG XXXX	XXXX=0-359	°
START ANGLE?	SAG?	0-359	°
END ANGLE XXXX	EAG XXXX	XXXX=0-359	°
END ANGLE?	EAG?	0-359	°
RESULTS X	RESULTS X	X=0-2, 0=ALL,1=P/F,2=LAST	°
RESULTS?	RESULTS?	0-2	°
SURGE DROP X	SD X	X=0~1, 0=OFF,1=ON	
SURGE DROP?	SD?	0~1	
OC FOLD X	OF X	X=0~1, 0=OFF,1=ON	
OC FOLD?	OF?	0~1	

IEEE 488.2 Common Commands

Command	Description	Acknowledgement
*IDN?	Identification Query	Company, Model Number, Serial Number, Firmware Revision
*RST	Reset Command	
*TST?	Self-Test Query	00H=OK 01H=TEST EEPROM ERROR
*CLS	Clear Status Command	Clear Standard Event Status Register Clear Service Request Register
*OPC	Operation Complete Command	When TEST command ok setting ESR BIT0 =1
*OPC?	Operation Complete Query	
*WAI	Wait for next command	
*ESR?	Standard Event Status Register Query	BIT 0 ,01H, (1) Operation Complete BIT 1 ,02H, (2) Not Used BIT 2 ,04H, (4) Query Error BIT 3 ,08H, (8) Device Error BIT 4 ,10H,(16) Execution Error BIT 5 ,20H,(32) Command Error BIT 6 ,40H,(64) Not Used BIT 7 ,80H,(128) Power On
*ESE XXX	Standard Event Status Enable Command	value=0~255
*ESE?	Standard Event Status Enable Query	0 - 255
*STB?	Read Status Byte Query	BIT 0 ,01H,(1) Not Used BIT 1 ,02H,(2) Not Used BIT 2 ,04H,(4) Not Used BIT 3 ,08H,(8) Not Used BIT 4 ,10H,(16) Message Available BIT 5 ,20H,(32) Standard Event (ESB) BIT 6 ,40H,(64) Request Service (MSS) BIT 7 ,80H,(128) Not Used
*SRE XXX	Service Request Enable	value=0~255
*SRE?	Service Request Enable Query	0 - 255
*PSC X	Power-On Status	value=0/1
*PSC?	Power-On Status Query	0, 1

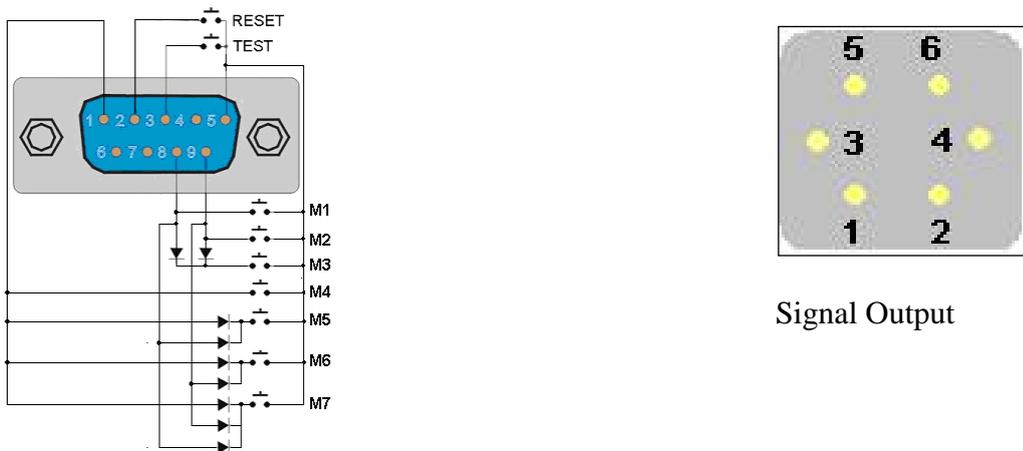
5.4 Non Volatile Memory

The instrument saves each parameter in non-volatile memory when the parameter is changed. The non-volatile memory has a limited write cycle life, therefore there is a special volatile memory location that is available for programmers who wish to send all parameters before executing each test. Memory 50, step 9 is the memory location that will **NOT** write the parameter to non-volatile memory. Settings written to this location from GPIB mode will be lost when power is shut down. Parameter changes to this location is unlimited and will not effect the life of the internal non-volatile memory chip.

CHAPTER 6. DESCRIPTION OF APPLICATION

6.1 Remote Interface

The rear panel connector of 6700 Series AC Power Source provides output signals to remotely monitor PASS, FAIL, and PROCESSING conditions. 6700 Series AC Power Source also provide an optional remote input interface and thus can control any test operation via remote The 9-pin D-type connector signals for Test , Reset, and 7 memories (M1~M7) input control signal. PLC remote function will be activated once the PLC Remote setting from SYSTEM setup parameter is turned on.



Signal Input (Option)

Signal Input and Storage

Upon turning on the PLC Remote setting, the TEST/RESET Indicator will be lit and the buzzer will beep twice before return to RESET condition, when any key on the front panel is pressed. In fact, whenever there is an abnormal output detected, it can be reset by pressing the “OUTPUT/RESET” key from the front panel or the Reset button from the PLC Remote and return to RESET condition.

TEST Connect between PIN 3 and PIN 5
 RESET Connect between PIN 2 and PIN 5

Memories Input Control

Memories Input Control can be achieved by using Normally Open (N.O) Momentary Button and the connection as:

	PIN 1	Pin 9	Pin 8
M1	OFF	OFF	ON
M2	OFF	ON	OFF
M3	OFF	ON	ON

M4	ON	OFF	OFF
M5	ON	OFF	ON
M6	ON	ON	OFF
M7	ON	ON	ON

For an example,

Memory 3 (M3) Connect PIN 8 and PIN 9 with a series diode (ex. D4148) at each pin and the joint point is connected to PIN 5.

Note: PIN 5 is Common of input signal (COM).

Signal Output

The rear panel connector provides output signals to remotely monitor PASS, FAIL, and PROCESSING conditions. Below is a listing that indicates what conditions activate each pin. When a terminal becomes active the relay closes thereby allowing the external voltage to operate an external device.

PASS Connect between PIN 1 and PIN 2.

FAIL Connect between PIN 3 and PIN 4.

PROCESSING Connect between PIN 5 and PIN6.

The following describes how the relays operate for each test condition.

PROCESSING - The relay contact closes the connection between pin (5) and pin (6) while AC Source is performing a test. The connection is opened at the end of the test.

FAIL - The relay contact closes the connection between pin (3) and pin (4) after detecting that the item under test failed any test. The connection is opened when the next test is initiated or the reset function activated.

PASS - The relay contact closes the connection between pin (1) and pin (2) after detecting that the item under test failed any test. The connection is opened when the next test is initiated or the reset function activated.

Note: To avoid any accident to be happened, the remote must be kept and handled by the assigned person in charge only.

CHAPTER 7. CALIBRATION

eec offers a standard one-year manufacture’s warranty. This warranty can be extended an additional four years provided that the instrument is returned each year to eec for it’s annual calibration. In order to be eligible for the extended warranty instruments must be returned to eec for calibration service at least once every twelve months.

Follow calibration is an example for model 6710.

7.1 Enter The Calibration Mode

Press and hold the calibration key on the rear panel with a pen, pencil, or small screwdriver while powering ON the 6700. The 6700 enters calibration mode after the power on sequence is complete. The initial calibration screen will appear as follows:

CALIBRATION			
Volt	150.0V	A-peak	5.6A
Volt	300.0V		
Curr	3.500A		
Curr	8.00A		
Power	350.0W		
Power	1000W		

Navigation keys: ^, v, Select, Exit

Use “^” or “v” softkey to scroll the highlighted area to the desired calibration point, .Then Press “Select” softkey to start the calibration.

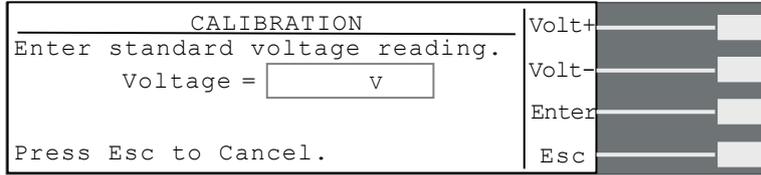
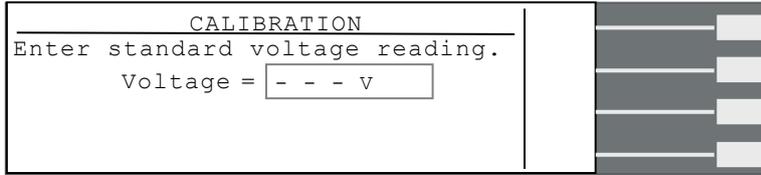
7.2 Calibration points

Use “^” or “v” softkey to scroll the highlighted area to the desired calibration point. Then Press “Select” softkey to start the calibration.

Calibration of AC 150.0V Low Voltage Range

CALIBRATION	
Connect a standard 150VAC voltmeter from output L to N.	
Press TEST to calibrate process. Press Esc to cancel.	Esc

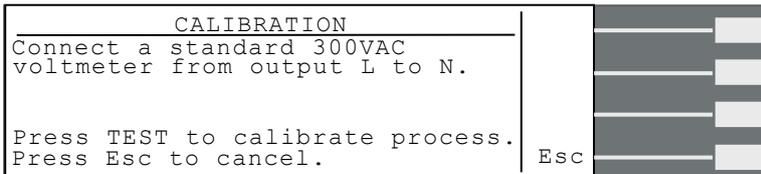
Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:



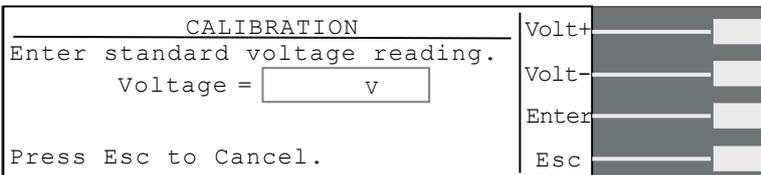
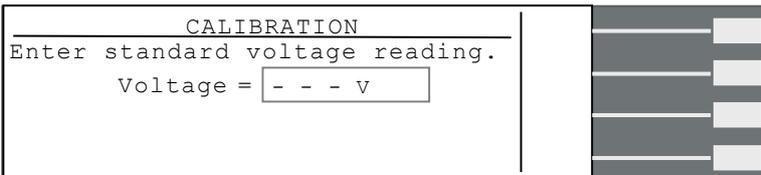
Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of AC 300.0V Low Voltage Range



Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:



Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of AC 3.500A Low Current Range

CALIBRATION		
Connect the 35Ω load series with 3.500AAC current meter from output L to N.		
Press TEST to calibrate process. Press Esc to cancel.	Esc	

Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:

CALIBRATION		
Enter standard voltage reading.		
Voltage = <input type="text" value="- - - v"/>		

CALIBRATION	Volt+	
Enter standard voltage reading.	Volt-	
Voltage = <input type="text" value="v"/>	Enter	
Press Esc to Cancel.	Esc	

Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of AC 8.000A High Current Range

CALIBRATION		
Connect the 13Ω load series with 8.00AAC current meter from output L to N.		
Press TEST to calibrate process. Press Esc to cancel.	Esc	

Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:

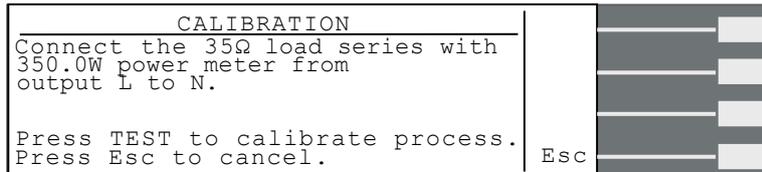
CALIBRATION		
Enter standard current reading.		
Current = <input type="text" value="-. - - A"/>		

CALIBRATION	Volt+	
Enter standard current reading.	Volt-	
Current = <input type="text" value="A"/>	Enter	
Press Esc to Cancel.	Esc	

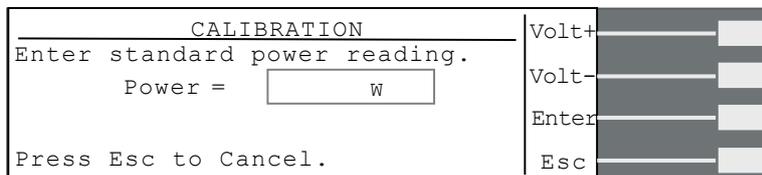
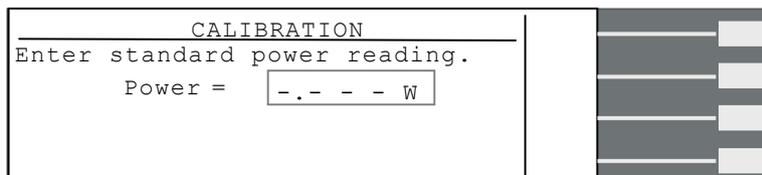
Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of 350.0W Low Power Range



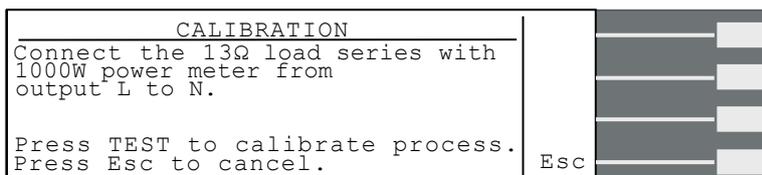
Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:



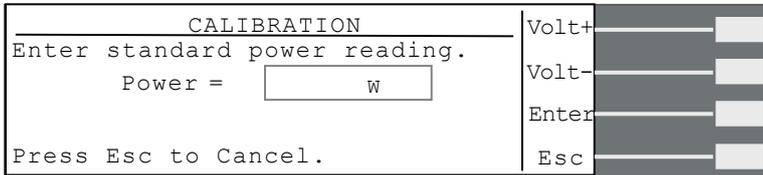
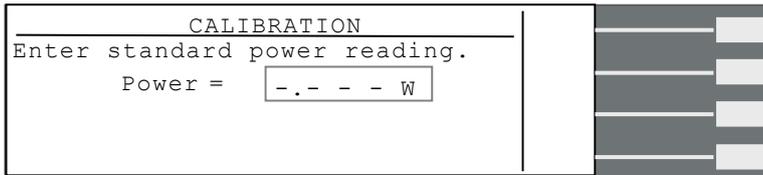
Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of 1000W High Power Range



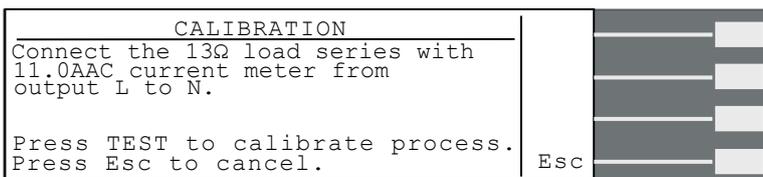
Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:



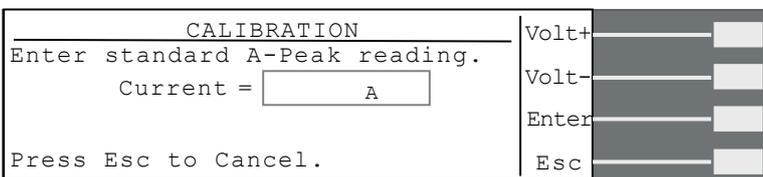
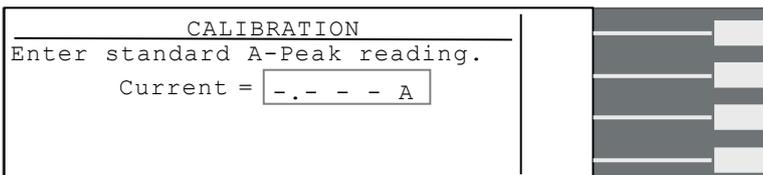
Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Calibration of AC11.0A High Peak Current Range



Follow above prompt to activate the calibration. After the calibration is activated, the screen will change to the text indicated as follows:



Read the measurement from your standard meter and enter it using the numeric keypad. You may now store the new calibration number by pressing the “ENTER” softkey or cancel by pressing the “Esc” softkey.

If the calibration is completed, the display will forward to the next calibration point.

Note : Reference for Calibration

Standard

Calibration Item		Unit	6705	6710	6720	6730	6740
Low Voltage Range	Calibration points	V	150.0	150.0	150.0	150.0	150.0
High Voltage Range	Calibration points	V	300.0	300.0	300.0	300.0	300.0
Low Current Range	Calibration points	A	3.500	3.500	3.500	3.500	3.500
	Resistance	Ω	35	35	35	35	35
High Current Range	Calibration points	A	4.00	8.00	16.00	25.00	33.00
	Resistance	Ω	25	13	7	4	3.5
Low Power Range	Calibration points	W	350.0	350.0	350.0	350.0	350.0
	Resistance	Ω	35	35	35	35	35
High Power Range	Calibration points	W	500.0	1000	2000	3000	4000
	Resistance	Ω	25	13	7	4	3.5
High Peak Current Range	Calibration points	A	5.0	11.0	22.0	33.0	45.0
	Resistance	Ω	25	13	7	4	3.5

Opt.624 Output 0 - 600V

If you order OPT.624 function, the calibration point of calibration item : “Low Voltage”, “High Voltage”, “Low Current”, “High Current”, and “High Peak Current” range will be changed follow below from the original points.

Calibration Item		Unit	6705	6710	6720	6730	6740
Low Voltage Range	Calibration points	V	300.0	300.0	300.0	300.0	300.0
High Voltage Range	Calibration points	V	600.0	600.0	600.0	600.0	600.0
Low Current Range	Calibration points	A	1.000	1.000	1.000	1.000	1.000
	Resistance	Ω	100	100	100	100	100
High Current Range	Calibration points	A	2.00	4.00	8.00	12.00	16.00
	Resistance	Ω	50	25	13	7	4
High Peak Current Range	Calibration points	A	2.0	5.0	11.0	16.0	22.0
	Resistance	Ω	50	25	13	7	4

Opt.623 Low Range Meter Resolution 0.1mA / 0.01W for 6705 / 6710

If you order OPT. 623 function 6700 Series AC Power Source will add two calibration items follow below.

Calibration Item		Unit	6705	6710
Current Range	Calibration points	mA	350.0	350.0
	Resistance	Ω	350	350
Power Range	Calibration points	W	35.00	35.00
	Resistance	Ω	350	350