HELIOS
POWER SOLUTIONS

PROGRAMMABLE AC POWER SUPPLY

Application Guide

- High Efficiency
- High Precision
- High Stability

PROGRAMMABLE AC POWER SUPPLY

Middle Power Single Phase AC Source

(2U)600W~1500W

(3U)2000W

(4U)3000W~5000W

Output			Model	Size	Standard Interface	Optional Information	Certificates
Voltage	Current	Power					
150V/300V	5.6A/2.8A	600W	SP300VAC600W	2U ❶	RS232/RS485/USB	(1) (2) (3)	CE/UL/CSA/FCC
150V/300V	9.2A/4.6A	1000W	SP300VAC1000W	2U ❶	RS232/RS485/USB	(1) (2) (3)	CE/UL/CSA/FCC
150V/300V	13.8A/6.9A	1500W	SP300VAC1500W	2U ❶	RS232/RS485/USB	(1) (2) (3)	CE/UL/CSA/FCC
150V/300V	16A/8A	2000W	SP300VAC2000W	3U ❷	RS232/RS485/USB/LAN	(4) (5)	CE/UL/CSA/FCC
150V/300V	27.6A/13.8A	3000W	SP300VAC3000W	4U ❸	RS232/RS485/USB/LAN	(4) (5)	CE/UL/CSA/FCC
150V/300V	32A/16A	4000W	SP300VAC4000W	4U ❸	RS232/RS485/USB/LAN	(4) (5)	CE/UL/CSA/FCC
150V/300V	46A/23A	5000W	SP300VAC5000W	4U ❸	RS232/RS485/USB/LAN	(4) (5)	CE/UL/CSA/FCC

Linked 3-Phase AC System

(9U)1800W~4500W

(17U)6000W

(17U)9000W~15000W

Output			Model	Size	Standard Interface	Optional Information	Certificates
Voltage	Power	Output Mode					
150V/300V	1800W	Single/Three Phase	SPS300VAC1800W	9U ❹	RS232/RS485/USB	(1)	CE
150V/300V	3000W	Single/Three Phase	SPS300VAC3000W	9U ❹	RS232/RS485/USB	(1)	CE
150V/300V	4500W	Single/Three Phase	SPS300VAC4500W	9U ❹	RS232/RS485/USB	(1)	CE
150V/300V	6000W	Single/Three Phase	SPS300VAC6000W	17U ❺	RS232/RS485/USB/LAN	(4)	CE
150V/300V	9000W	Single/Three Phase	SPS300VAC9000W	17U ❻	RS232/RS485/USB/LAN	(4)	CE
150V/300V	12000W	Single/Three Phase	SPS300VAC12000W	17U ❻	RS232/RS485/USB/LAN	(4)	CE
150V/300V	15000W	Single/Three Phase	SPS300VAC15000W	17U ❻	RS232/RS485/USB/LAN	(4)	CE

The output of the three phase power supply can be connected in two ways, including Wye connection and Delta connection. In the Delta connection mode, the output voltage can reach 520V.

Dimensions & Weight

❶ 423.0x87.0x520.0 mm & 15.9kg

❷ 423.0x133.0x520.0 mm & 21.4kg

❸ 423.0x177.0x520.0 mm & 29kg

❹ 540.0x400.0x640.0 mm & 88.7kg

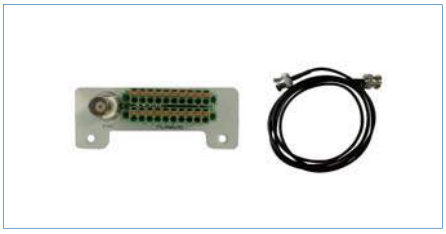
❺ 560.0x754.0x700.0 mm & 134kg

❻ 560.0x754.0x700.0mm & 157kg

Optional Information

(1) LAN & GPIB interface card & cables

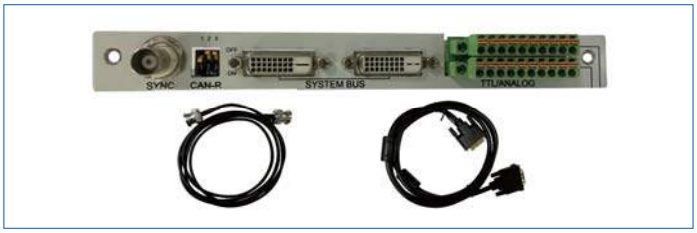
(2) Analog I/O interface card & cable



(3) Multiphase link card & cable

(4) GPIB interface card & cable

(5) Analog I/O & multiphase link card & cables



Features

- Large color touch screen with intuitive interface, easy to operate
- Features AC, DC, AC+DC output modes, AC+DC output mode for voltage DC offset simulation
- Turn on, turn off phase angle control, 0-359.9°
- Output frequency: 15-1200Hz, programmable slew rate setting for changing voltage and frequency
- High output current crest factor which is ideal for inrush current testing
- Built-in power meter function, can real-time measure 15 electrical parameters such as RMS voltage, current, power, apparent power and etc. This series AC source can measure up to 40 orders of the voltage or current harmonics. Support LIST/PULSE/STEP modes to simulate all kinds of power line disturbance conditions
- Triac Dimmer function for dimming/governor simulation function
- Sweep function for efficiency testing and shows voltage and frequency value at max power
- Multiple current range to make current measurement more accurate
- Front panel USB interface supports CSV format to import waveform
- OCP/OVP/OPP/OTP/reverse current protection/short circuit protection
- Programmable voltage and current limit, support CC mode
- Support up to 2 units in series, 4 units in parallel
- Support three phase power output, can simulate three phase unbalanced output
- Support external analog input control and TTL electrical level output
- Two versions to meet the cost performance and different applications

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Difference between Advanced Version and Professional Version

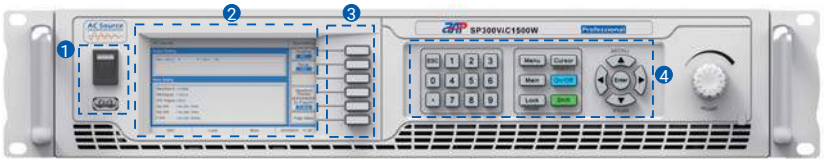
Function description	Advanced Version	Professional Version
Output frequency range	15~1000Hz	15~1200Hz
Built-in IEC standards	IEC 61000-4-11	IEC 61000-4-11; IEC 61000-4-13; IEC 61000-4-14; IEC 61000-4-28
Programmable output impedance	Not supported	Support, meet IEC 61000-3-2/ IEC 61000-3-3 output impedance test requirements
Harmonic/inter-harmonic generation simulation and measurement function	Not supported	Support, the harmonic components can be up to 40 orders

Panel Introduction

0.6 - 1.5kVA

1. Power Switch (Up), USB Interface (Down)
2. Color Touch Screen
3. Multifunctional Keys
4. Numeric and Functional Keys
5. Output Terminal
6. AC Input Terminal
7. RS485/RS232/USB Communication Interface (LAN & GPIB Interface Card is Optional)
8. Analog I/O Interface Card (Optional)

Front Panel Introduction



Rear Panel Introduction

Note: If the LAN&GPIB communication card is selected, it will replace RS485/RS232/USB to be installed in the same position.
If parallel/multiphase interface card is selected, it will replace remote I/O interface card to be installed in the same position.

2 - 5kVA

1. Power Switch (Up), USB Interface (Down)
2. Color Touch Screen
3. Multifunctional Keys
4. Numeric and Functional Keys
5. Output Terminal
6. AC Input Terminal
7. RS485/RS232/USB/LAN Communication Interface
8. GPIB Communication Interface (optional)
9. Analog I/O & multiphase link card (optional)

Front Panel Introduction

Rear Panel Introduction

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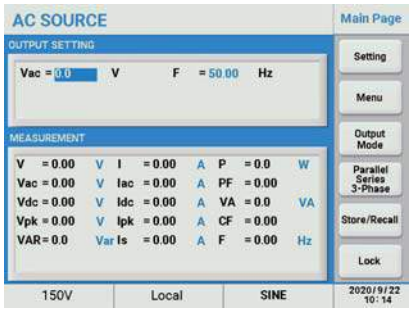
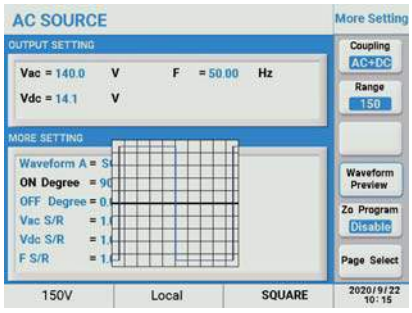
Function Introduction

Graphical User Interface

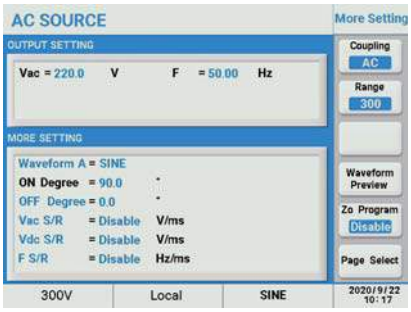
The large color touch screen provides simple and fast operation for customers, real-time update of display output data and power status, and graphical display makes it more intuitive.

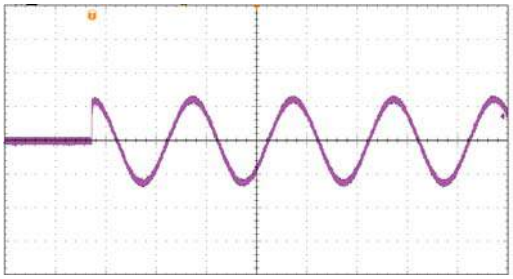




Settable ON/OFF Phase Angle of Output Waveform

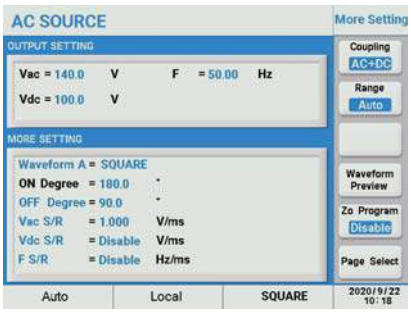
This series of AC power supply can set the ON phase and OFF phase of sinusoidal output waveform, suitable for the output test of switching power supply. Set the ON angle to 90 degrees for surge current testing, the power supply will show the measured value of surge current. Users can set when start to measure the surge current and the duration of the measurement.

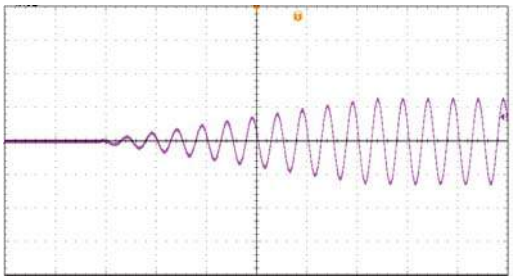




Slew Rate Setting for Voltage and Frequency

This series AC power supply let users set the slew rate of voltage and frequency, in such application in order to reduce the inrush current during motor or compressor startup.





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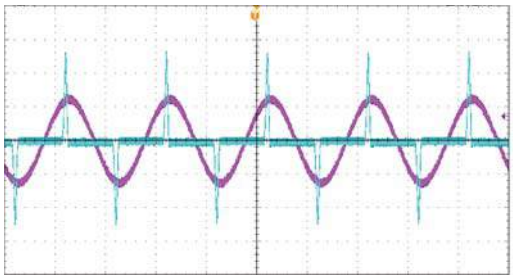
High Output Crest Factor

This series AC power supply deliver up to 5~6 times of peak current from its RMS current, so it is suitable for testing switching power supplies and motor with high inrush current issue.

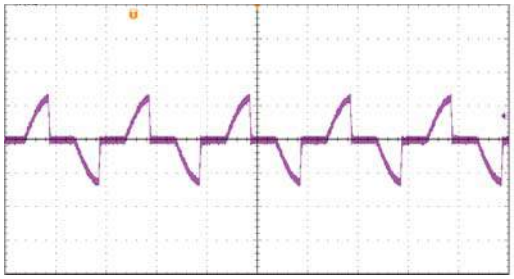


Power Sweep Function

This series AC power supply can test the efficiency of switching power supply and capturing the voltage, current, power and frequency at the maximum power operating point, the measurements will be displayed at the end of the sweep.

Triac Dimmer Function

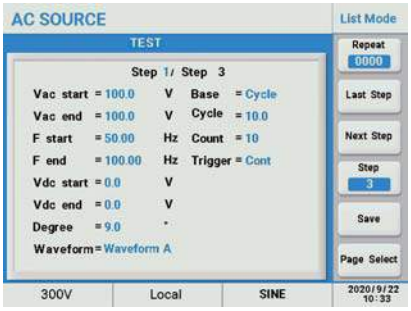
This series AC power supply built-in triac dimmer function, which is used to do dimming and speed regulating test for lamp or electric motor to ensure the products work well both in R&D and production testing.

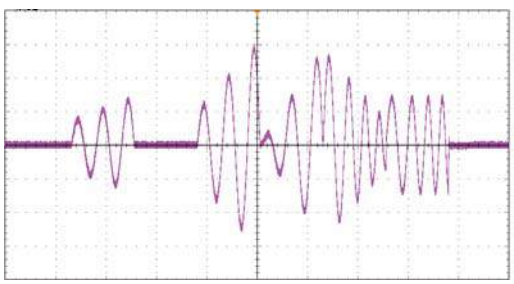


Power Line Disturbance Simulation

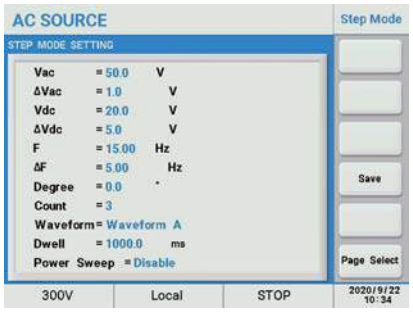
This series AC power supply provides powerful function to simulate all kinds of power line disturbance conditions such as cycle dropout, transient spike, brown out and etc. This feature make this series AC power supply ideal for R&D labs, universities and certification labs.

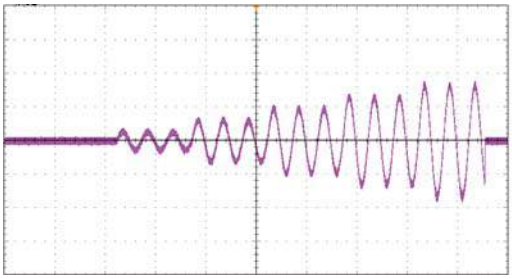
LIST Mode



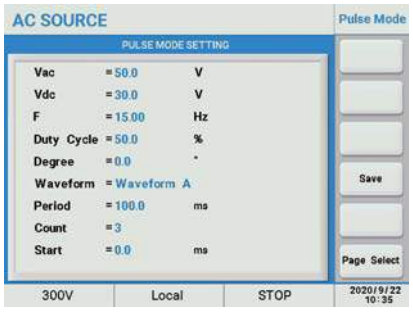


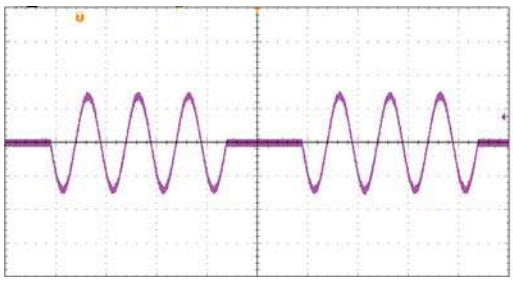
STEP Mode





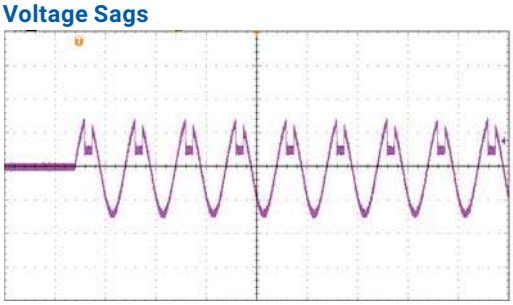
PULSE Mode



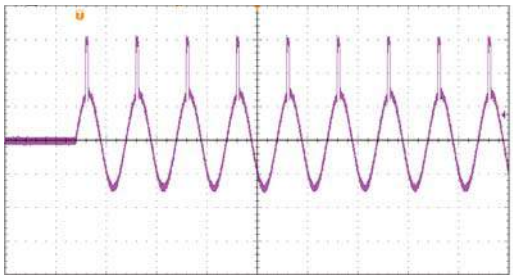


Voltage Sags/Voltage Spikes

Voltage Sags



Voltage Spikes



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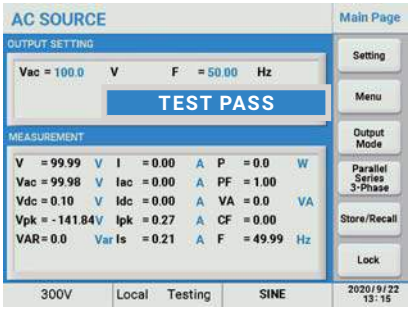
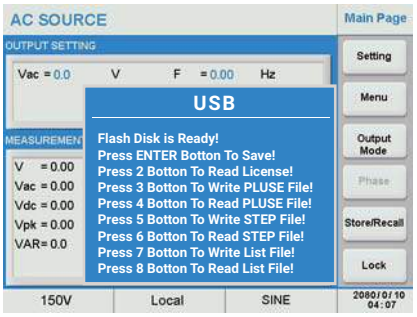
Test Mode

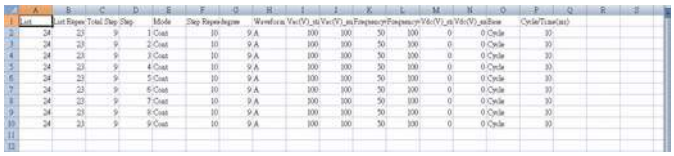
The test mode compares measurement values against a user defined set of measurement limits and shows a PASS or FAIL result in one or more measurement are out of range. The user can set when start of the measurement and duration of the test.



File Save and Recall Via The USB Interface

The user can save the screenshot via the USB interface in the front panel. The user can import a CSV file via the USB interface to generate waveform output.

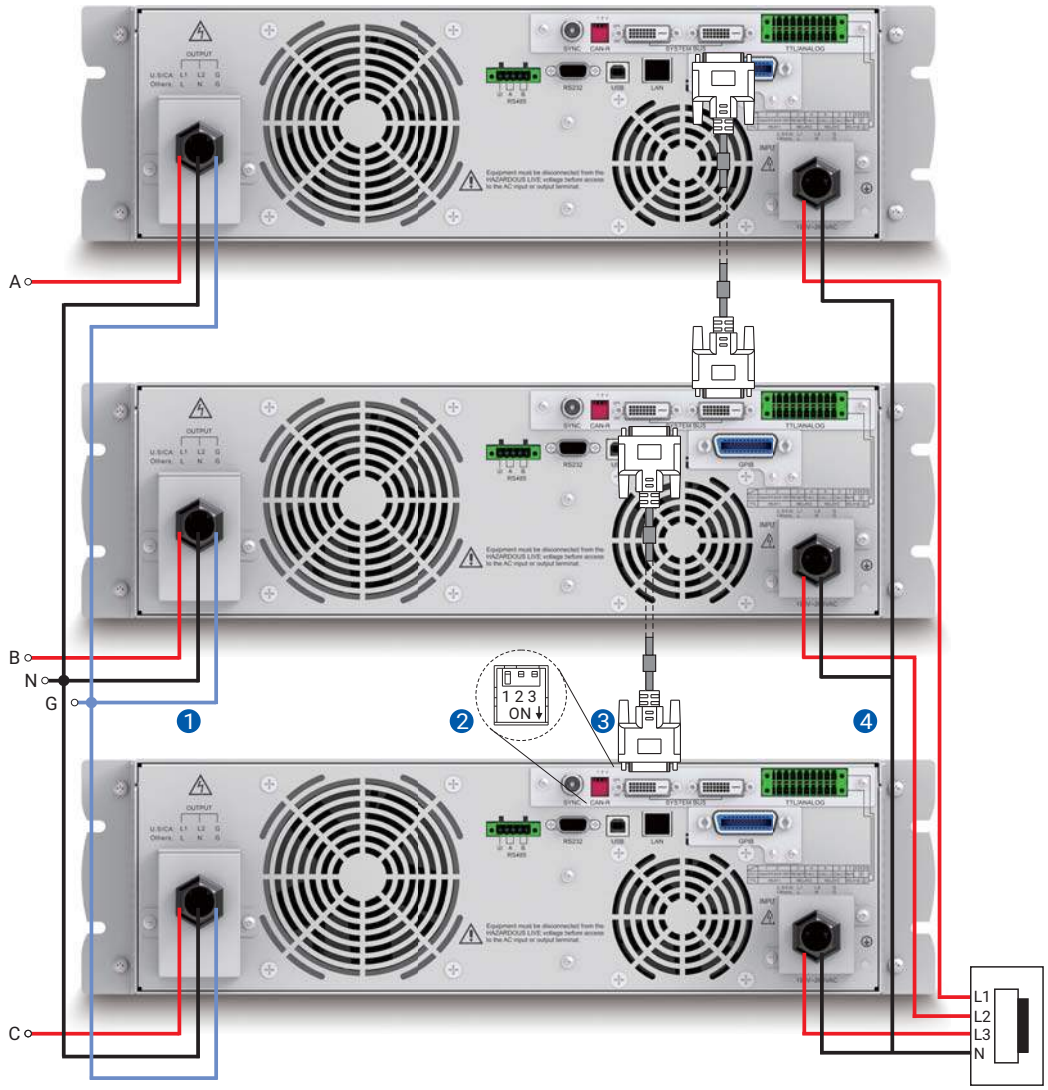




Parallel/Series/3-Phase Mode

This series AC power source can be used in parallel or series to provide more power, the maximum current up to 184A and the voltage up to 600V. In 3-phase mode, the Master unit is always phase A, Slave 1 is always phase B and Slave 2 is always phase C. The phase difference between phase A and B is always 120°and between phase A and C is always 240°. The output voltage of phase B and C will be set to the same setting as that for phase A (Master) if the Voltage Mode is set to COM. Or if the Voltage Mode is set to Multi, phase B and C output voltage can be set individually to simulate 3-phase unbalance system. The output of 3-Phase system can be connected for three-phase, four wire (Delta configuration) loads or for three-phase, five wire (Wye configuration) according to the application requirement.

Three-phase five-wire connection (Wye type)



1. Output connections
2. Terminal resistance CAN-R, flip Dip switch 1 to ON position (Down)
3. System bus communication cable.
4. Only support three-phase five-wire connection

The output voltage range of three-phase five-wire (Wye type) connection is 0 ~ 300V.

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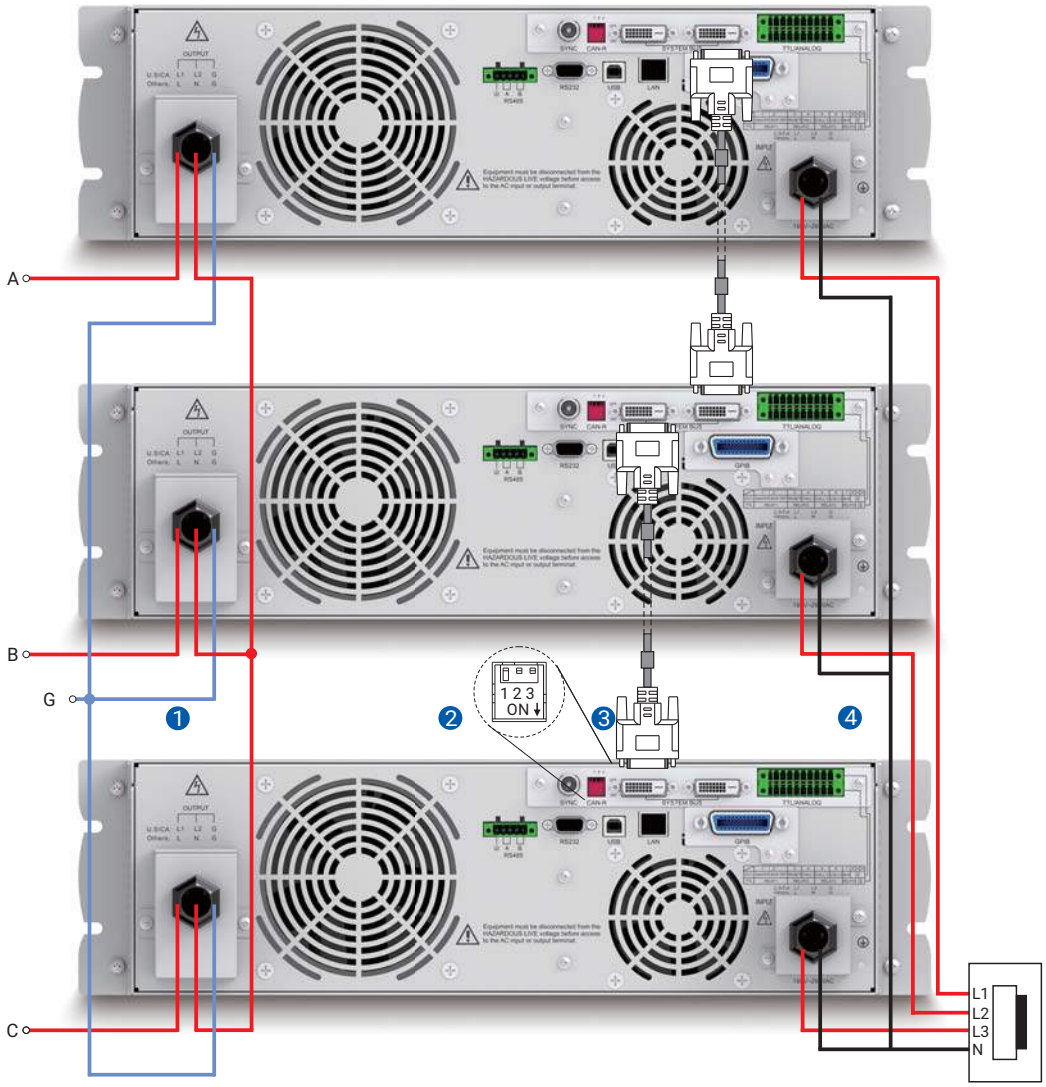
Three-phase four-wire connection (Delta type)



1. Output connections
2. Terminal resistance CAN-R, flip Dip switch 1 to ON position (Down)
3. System bus communication cable.
4. Only support three-phase five-wire connection

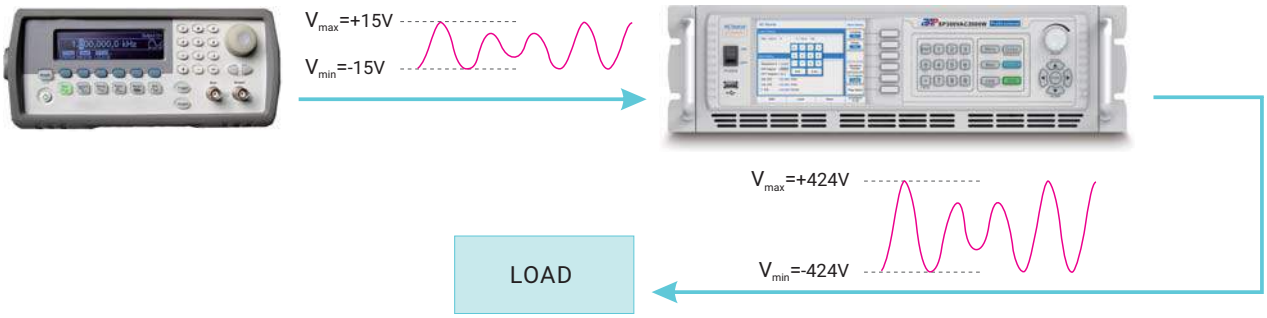
The output voltage range of three-phase four-wire (Delta type) connection is 0 ~ 520V

External Control Function

By selecting Analog I/O card to achieve below function:

1) Amplifier Mode

In Amplifier mode, the power source acts as a power amplifier, taking a low-level analog signal and amplifying it by a fixed amount of gain.



2) External Control Instruction

Pin No.	Reference	Type	Description	Maximum
Pin1	ON/OFF	EXT.V	Control input for output on/off, low level (0~0.5V) disables the output, high level (4.5~5.5V) enables the output	6Vdc
Pin2	KEEP OFF[1]	EXT.V	Keep OFF function, low level (0-0.5V) disables the function, high level (4.5-5.5V) enables the function	
Pin3	RESET	EXT.V	High level (4.5 ~ 5.5V) will enable alarm clear function	
Pin4	CALL 1	EXT.V	0=low electrical level (0-0.5V), 1= high electrical level (4.5 ~ 5.5V)	
Pin5	CALL 2	EXT.V	0=low electrical level (0-0.5V), 1= high electrical level (4.5 ~ 5.5V)	
Pin6	CALL 3	EXT.V	0=low electrical level (0-0.5V), 1= high electrical level (4.5 ~ 5.5V)	
Pin7	N/A	EXT.V	Not Used	–
Pin8-10	⏚	EXT.V	GND	–

[1] If the KEEP OFF signal keeps high (enable) there will be always no ouptut.

3) TLL Signal Instruction

Pin No.	Reference	Type	Description	Maximum	Electrical Parameters
Pin1-2	RELAY1-PASS	TTL	These two pins will connected internally when the unit passed the test mode	250VAC 3Amp/ 30VDC 3Amp	These pins without positive andnegative polarity, do not share the ground netither.
Pin3-4	RELAY2-FAIL	TTL	These two pins will connected internally when the unit failed the test mode		
Pin5-6	RELAY3-RUN	TTL	These two pins will connected internally when the unit is running		
Pin7-8	RELAY4	TTL	Not Used	–	–
Pin9-10	⏚	TTL	GND	–	–

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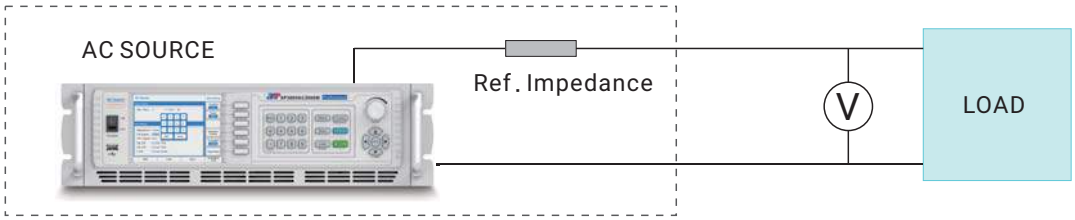
Firmware Upgrade

This series AC power source supports firmware upgrade. The DSP firmware can be upgraded via RS232 communication, the display and remote firmware can be upgraded via the USB interface in the front panel. The upgrade process is very easy to operate. The upgrade feature keeps the latest software function supported by the power supply.

Professional Version Power Supply Function

Programmable Output Impedance Function

The low output impedance and low voltage harmonics of this series power supply make it ideal for IEC61000-3-2 standard testing. A current feedback control circuit makes the output voltage changed with load. This feature is suitable for IEC61000-3-3 Flicker tests. The user can set the resistance and inductance value according to the test requirement.



More Built-in IEC Standard Test Waveforms

Professional version supports more built-in IEC standard test waveforms

IEC 61000-4-11，Testing and measurement techniques-Voltage dips, short interruptions and voltage variations immunity tests (AC,<16A)

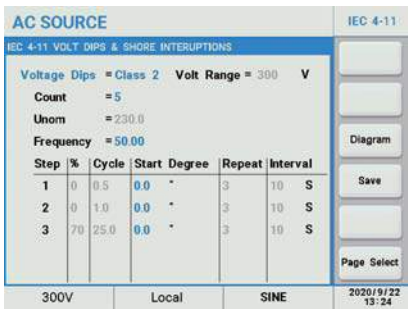
IEC 61000-4-13，Testing and measurement techniques-Harmonics and inter-harmonics including mains signaling at AC power port, low frequency immunity tests

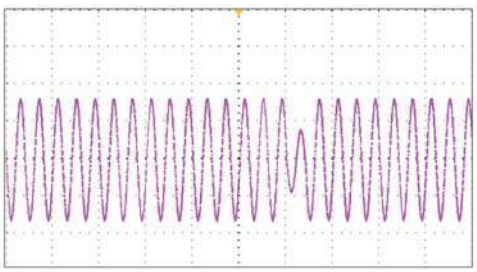
IEC 61000-4-14，Testing and measurement techniques-Voltage fluctuation immunity test

IEC 61000-4-28，Testing and measurement techniques-Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase

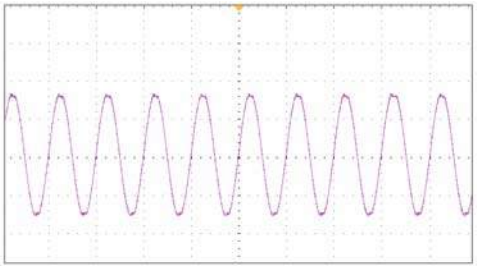
The above standards can meet the power immunity test for products exported to Europe.

IEC 61000-4-11

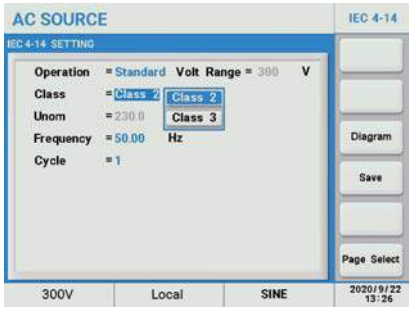


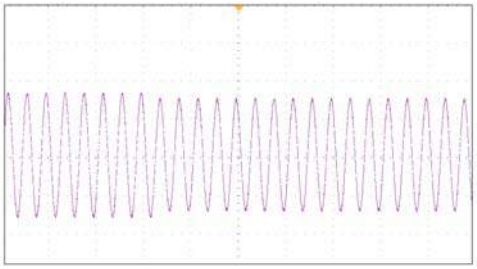


IEC 61000-4-13

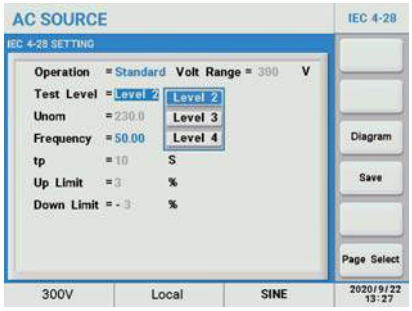


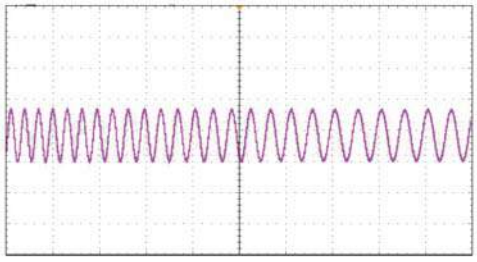
IEC 61000-4-14





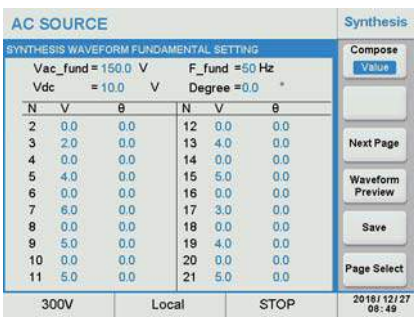
IEC 61000-4-28

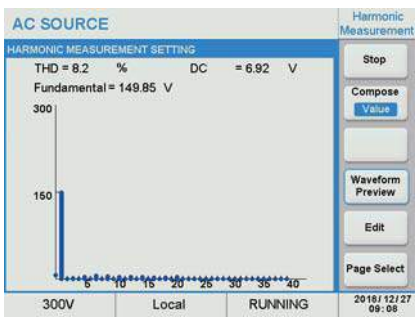


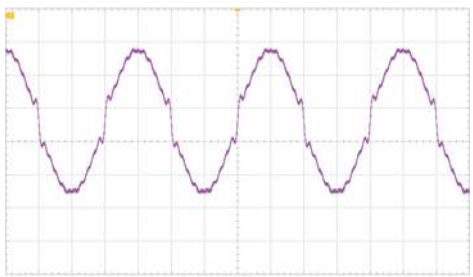


Harmonic/inter-harmonic Generation Simulation and Measurement Function

Support creating waveforms made up of a series of harmonics frequencies, amplitudes and phase shifts, up to 40 orders harmonics of 50Hz or 60Hz. The harmonics measurement function measures total harmonic distortion (THD), DC voltage and current and fundamental voltage and current for output settings of 50Hz or 60Hz. The measurement of 2~40 orders can be displayed in absolute values or in percent of the fundamental, the harmonics measurement will be displayed with a gr aphical representation.





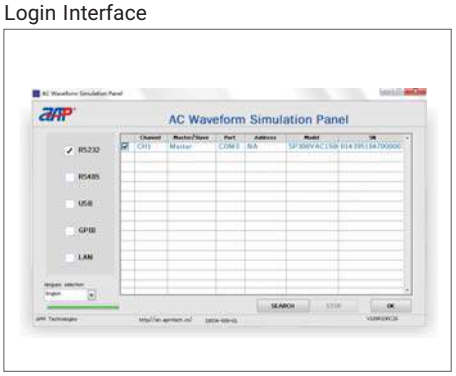


PROGRAMMABLE AC POWER SUPPLY

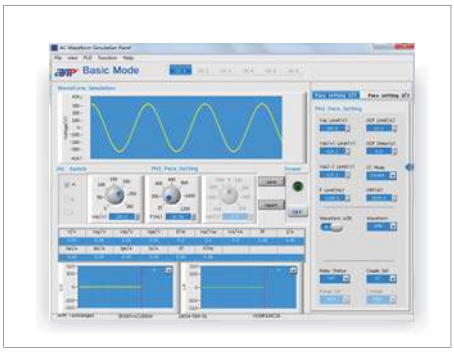
Monitoring Software

AC Waveform Simulation Panel is a graphical user interface that provides extraordinary capabilities and convenience by delivering control of the unit remotely, which covers all functions of panel operation.

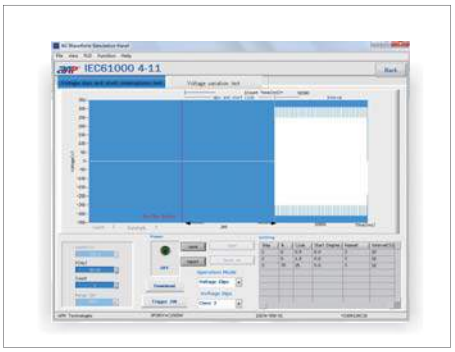
Login Interface



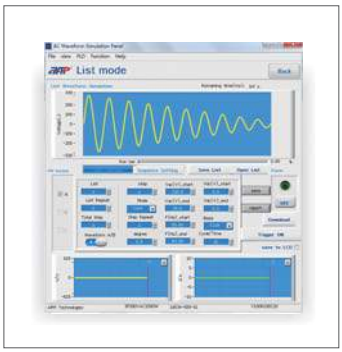
Basic mode(Main interface)



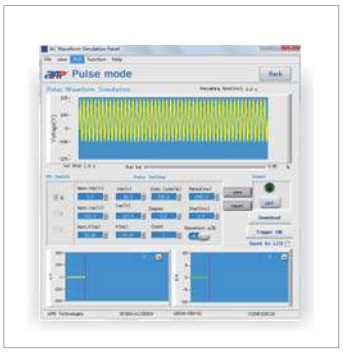
IEC61000 4-11 interface



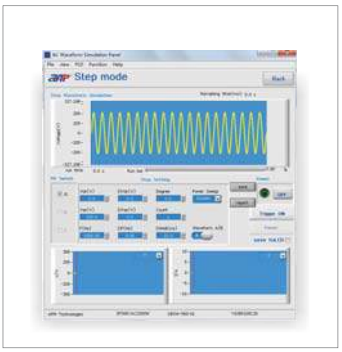
List mode interface



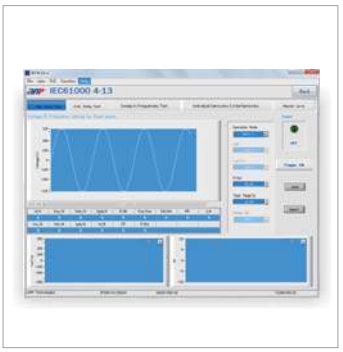
Pulse mode interface



Step mode interface

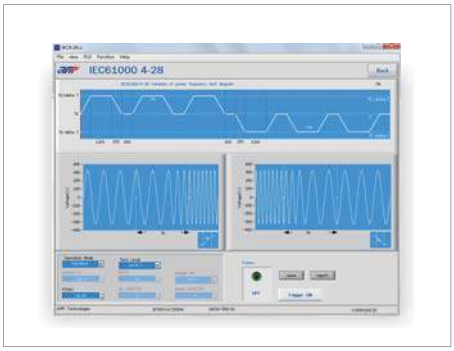


IEC61000 4-13 interface

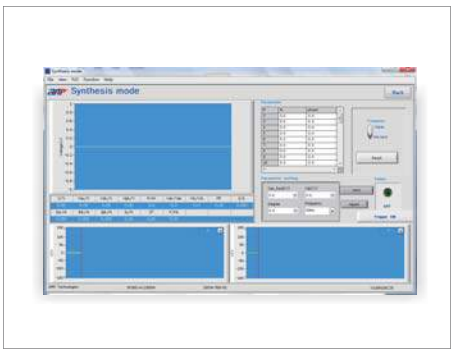


IEC61000 4-14 interface

IEC61000 4-28 interface

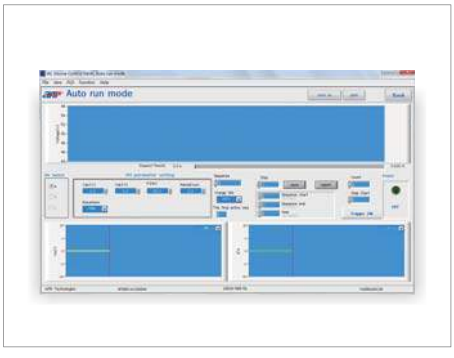


Synthesis mode interface

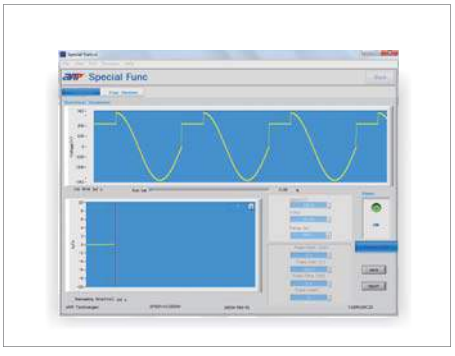


Harmonics Measure mode interface

Auto run mode interface



Special Func interface



Web Server Function

This series AC power supply provides a built-in web server interface, then the user can configure and monitor the settings from the PC's Web browser.