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# SP300VAC1000W
# Programmable AC Source

SP300VAC1000W is a switching mode single-channel output high-precision programmable AC power source, which adopts high speed DSP+CPLD control, high frequency PWM power technology and active PFC design to realize AC/DC stable output. SP300VAC1000W is featured with high power density, high reliability and high precision, meanwhile it possesses operation interface of touch screen and keys manually. It is able to analog output normal or abnormal input for electrical device to meet test requirements.
This series is applicable to multiple sectors such as electric, lighting and aviation sectors and it could be applied to enterprise's production test as well.

## Features

- 4.3"large touch color screen, possess complete functions and easy to operate.
- Support for USB data import/export and screen snap from front panel.
- AC+DC mixed or independent output mode for voltage DC offset simulation.
- Capable of setting voltage and current output restriction, support for constant current output mode.
- Capable of setting output slope of voltage and frequency.
- Capable of setting ON/OFF phase angle.
- Support for LIST/PLUSE/STEP mode, simple time setting and circulation setting, which is suitable for power line disturbance simulation test.
- Built-in power sweeping function.
- Built-in Transient mode.
- Built-in Dimmer function.
- With reverse current protection to avoid current flowing backward.
- Built-in power meter, which is capable of measuring 15 electrical parameters, including voltage, current, frequency, etc.
- Support mA current measurement function.
- Built-in IEC61000-3-3/ IEC61000-3-2/ IEC61000-4-11/ IEC61000-4-14/ IEC61000-4-28/ IEC61000-4-13 standard test required waveform.

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| MODEL | | SP300VAC1000W Advanced | SP300VAC1000W Professional |
|---|---|---|---|
| **INPUT** | | | |
| Voltage | | 90~265VAC | |
| Frequency | | 47~63Hz | |
| Phase | | 1 Phase | |
| Max.Current | | 15A | |
| Power Factor at 220VAC Input ,Full Load | | ⩾0.95 Active PFC | |
| Efficiency | | >86% (Peak)<br>>84% at 220VAC,50Hz input/230VAC,50Hz output,Full Load | |
| **OUTPUT** | | | |
| AC Power | | 1000VA | |
| Max.Current (r.m.s) | 0~150V(L) | 9.2A | |
| | 0~300V(H) | 4.6A | |
| Max.Current (Peak) | 0~150V(L) | 55.2A | |
| | 0~300V(H) | 27.6A | |
| Phase | | 1 Phase | |
| Total Harmonic Distortion (THD) | | <0.3% (Resistive Load) at 15.0~70.0Hz and output voltage within the 80~140VAC at Low Range or the 160~280VAC at High Range<br><1% (Resistive Load) at 70.1~500Hz and output voltage within the 80~140VAC at Low Range or the 160~280VAC at High Range<br><1% (Resistive Load) at 501~1000Hz and output voltage within the 100~140VAC at Low Range or the 160~280VAC at High Range<br><2% (Resistive Load) at 1001~1200Hz and output voltage within the 100~140VAC at Low Range or the 160~280VAC at High Range<br>Note: 1001~1200Hz only available to Professional Version Models | |
| Crest Factor(CF) | | <6 | |
| Load Regulation | | ±0.1%F.S. (Resistive Load) at 15~70Hz<br>±0.5%F.S. (Resistive Load) at 70.1~1200Hz<br>Note: 1001~1200Hz only available to Professional Version Models | |
| Line Regulation | | ±0.1V | |
| Voltage(AC) | Range | 0~300VAC, 150V/300V/Auto Mode | |
| | Resolution | 0.1V | |
| | Accuracy | 0.2% of setting +0.2%F.S. | |
| Phase Angle (Starting /Ending) | Range | 0~359.9° | |
| | Resolution | 0.1° | |
| | Accuracy | ±1° @45~65Hz | |
| Voltage(DC) | Range | 0~424VDC | |
| | Resolution | 0.1V | |
| | Accuracy | 0.2% of setting +0.2%F.S. | |
| | Max.Power | 1000W | |
| | Max.Current (L/H Range) | L 6.5A | |
| | | H 3.3A | |
| | Ripple& Noise(r.m.s) | L <700mVrms @Bandwidth 20Hz to 1MHz H <1100mVrms @Bandwidth 20Hz to 1MHz | |
| | Ripple& Noise(Peak) | <4000mVp-p @Bandwidth 20Hz to 1MHz | |
| | Rise time/ drop time | <180us | |
| Current OC Fold Mode | Resolution | 0.01A | |
| | Accuracy | 0.5% of setting +1.0%F.S. | |
| | Response Time | <1400ms | |

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| MODEL | | SP300VAC1000W Advanced | SP300VAC1000W Professional |
|---|---|---|---|
| Frequency | Range | 15~1000Hz Full Range ADJ | 15~1200Hz Full Range ADJ |
| | Resolution | 0.1Hz at 15.0~99.9Hz,<br>1Hz at 100~1000Hz | 0.1Hz at 15.0~99.9Hz,<br>1Hz at 100~1000Hz,<br>5Hz at 1001~1200Hz |
| | Accuracy | 0.1% of setting | |
| Programmable Output Impedance | | Not Support | 0Ω +200μH~1Ω +1mH |
| Harmonic & Inter-harmonics Simulation | | Not Support | 2400Hz |
| **MEASUREMENT** | | | |
| Voltage | Range | AC 0~300VAC | |
| | | DC 0~424VDC | |
| | Resolution | 0.1V | |
| | Accuracy | 0.2% of setting +0.2%F.S. | |
| Frequency | Range | 0~1000Hz | 0~1200Hz |
| | Resolution | 0.1Hz at 15.0~99.9Hz,<br>1Hz at 100~1000Hz | 0.1Hz at 15.0~99.9Hz,<br>1Hz at 100~1000Hz,<br>5Hz at 1001~1200Hz |
| | Accuracy | 0.1% of setting | |
| Current* (r.m.s) | Range | H 0.15A~9.2A | |
| | | M - | |
| | | L 0.1A~4.6A | |
| | | mA - | |
| | Resolution | 0.01A | |
| | Accuracy | H 0.4%+1.0%F.S. | |
| | | L 0.4%+1.0%F.S. | |
| Current* (Peak) | Range | 0A~81.5A | |
| | Resolution | 0.01A | |
| | Accuracy | H 0.4%+1.0%F.S. | |
| | | L 0.4%+1.0%F.S. | |
| Power | Range | 0~1000W | |
| | Resolution | 0.1W | |
| | Accuracy | 0.4% of setting +1.0%F.S. at PF>0.2, Voltage >5V | |
| Power Apparent (VA) | Range | 0~1000VA | |
| | Resolution | 0.1VA | |
| | Accuracy | Voltage*Irms, Calculated value | |
| Power Resistive (VAR) | Range | 0~1000VAR | |
| | Resolution | 0.1VAR | |
| | Accuracy | $\sqrt{(VA)^2-(W)^2}$ , Calculated value | |
| Power Factor (PF) | Range | 0.00~1.00 | |
| | Resolution | 0.01 | |
| | Accuracy | W/VA, Calculated value | |
| Harmonic | Range | Not Support | 2~40 orders |
| **EXTRA FUNCTION** | | | |
| Slew Rate | Range | AC Voltage 0.001~1200.000V/ms and Disable | |
| | | DC Voltage 0.001~1000.000V/ms and Disable | |
| | | Frequency 0.001~1600.000Hz/ms and Disable | |

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| MODEL | | SP300VAC1000W Advanced | SP300VAC1000W Professional |
|---|---|---|---|
| Remote Sense | Range | 5V(rms), Max. Total power less than rated power | |
| Transient Generator (only for 15~70Hz) | Range | Trans-Start : 0.0~66.5ms @15Hz, Resolution : 0.1ms<br>Trans-Volt : -212V~+212V(L), -424V~+424V(H), Resolution : 0.1V<br>Trans-Time : 0.0~66.5ms @15Hz, Resolution : 0.1ms<br>Trans-Count : 0~9999, Constant | |
| Calibration | | Firmware-based calibration through the digital interface or front panel display | |
| Test Function | | Yes | |
| Parallel Output for 1 Phase | | Not Support | |
| Series Output for 1 Phase | | Not Support | |
| Link Output for 3 Phase | | Not Support | |
| **GENERAL** | | | |
| Graphic Display | | 4.3" Color touch LCD | |
| Operation Key Feature | | Soft key, Numberic key, Rotary Knob, Support USB disk | |
| Rack mount Handles | | Yes | |
| FAN | | Temperature Control | |
| Protection Circuits | | OCP, OVP, OPP, OTP, RCP, PRI_UVP, PRI_OVP, PRI_OTP, PRI_OCP, USB_OCP | |
| Interface | | USB, RS485, RS232 (Standard); LAN, GPIB (Option) | |
| **REMOTE CONTROL INPUT/OUTPUT SIGNAL CHARACTERISTICS(OPTION)** | | | |
| Remote Input Signal | | Signal input for external trigger for execution of programmed value | |
| | | Signal : ON/OFF, RESET, KEEP OFF, Recall program memory 1 through 7 | |
| Remote Output Signal | | Signal output indicating that a test mode is present | |
| | | Signal : PASS, FAIL, TEST-IN-PROCESS | |
| External Signal -Waveform input | | Signal input for output voltage waveform programming by external analog reference via BNC type.<br>Between the sync signal and the output wave will be 0.5ms time difference | |
| **ENVIRONMENTAL** | | | |
| Operating Temperature | | 0°C to 40°C | |
| Storage Temperature | | -40°C to 85°C | |
| Noise | | 73dBA(Max fan speed) | |
| Altitude | | 2000m | |
| Relative Humidity | | 5%~95%, non-condensing | |
| Temperature Coefficient | | 100ppm/°C at Voltage, 300ppm/°C at Current, 100ppm/°C at Frequency | |
| **MECHANICAL** | | | |
| Dimensions(W∗H∗D) | | 483.0∗87.0∗520.0 mm | |
| Package Dimensions (W∗H∗D) | | 744.0∗241.0∗594.0 mm | |
| Unit Net Weight | | 15.9kg | |
| Accessories Weight | | 0.4kg | |
| Net Weight | | 19.0kg | |
| **REGULATORY COMPLIANCE** | | | |
| EMC | | CE marked for EMC Directive 2014/ 30/EU /EN61326-1: 2013 Class A for emissions and immunity standard as required for EU CE Mark. FCC Verification of conformity for CFR 47 Part 15 of the FCC Rules. | |
| Safety | | CE marked for LVD Directive 2014/ 35/EU /EN61010-1-third edition as required for EU CE Mark. | |
| CE Mark | | Installation Overvoltage Category II；Pollution Degree 2；Class II equipment；indoor use only. | |
| UL Mark | | CSA NRTL certified for US and Canada to CAN/CSA-22.2 No.61010-1-12, UL 61010-1 Third Edition. | |
| Isolation Voltage | | 3000VAC, input to output, 1500VAC, input to chassis | |
| RoHS | | Meet to EU Directive 2011/65/EU for restriction of hazardous substances in Electrical and Electronic Equipment | |

∗ Note:The tolerance will change slightly in high frequency condition.

∗ Warranty 1 (one) year,or refer to relevant contract term.

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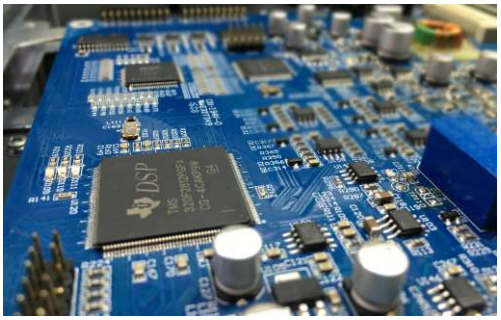
# Basic Functions(1)

## High Speed DSP+CPLD Control Platform

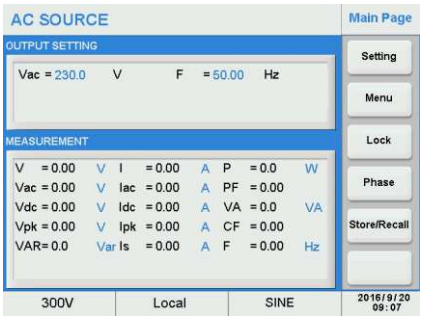
Adopts current high-end power supply DSP+CPLD control technology to strengthen inner data and logic operation ability. The product is of faster control and more stable operation. Enable user to quick set and read various waveform, generate harmonics analysis, support remote update.



DSP+CPLD

## Integrated Multifunctional Power Meter

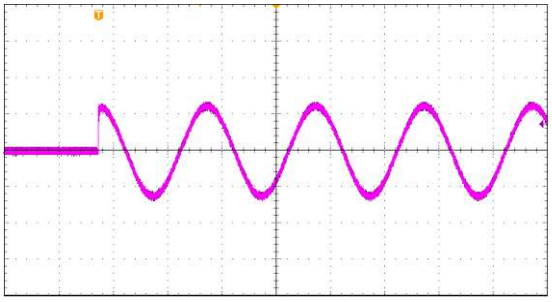
This series contains a high-precision power meter, the real-time data could be checked precisely and quickly during test, the situation of the test object could be grasped easily, there is no need to connect extra complex circuit and power meter to save test time and equipment cost. It can measure 15 parameters in the figure and the parameters can be self-defined in sequence.



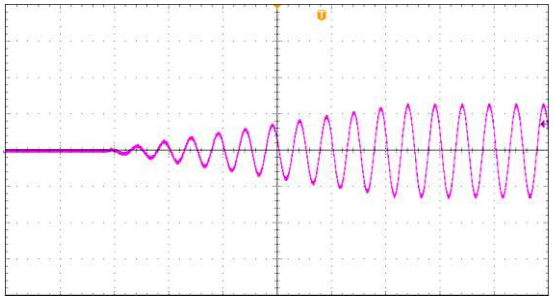

Main Interface of Display Panel

## Adjustable Phase Angle/Slope

User could set the start and stop phase angle ranged from 0-359.9° , which is applicable to verification test of ON/OFF inrush current testing. User can set the rise & fall slope of voltage and frequency to make the voltage change slowly, which is applicable to start inductive or capacitive load with large capacity to avoid circuit break caused by protection that triggered by high current when instantaneously start the device.



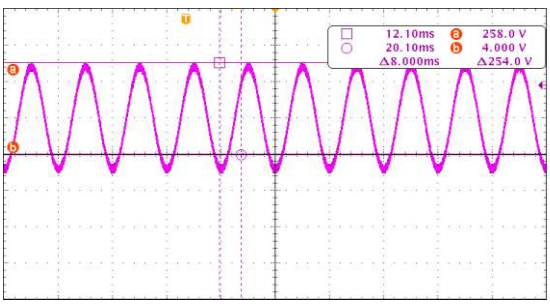
Adjustable Phase Angle



Adjustable Slope

## AC/DC Output

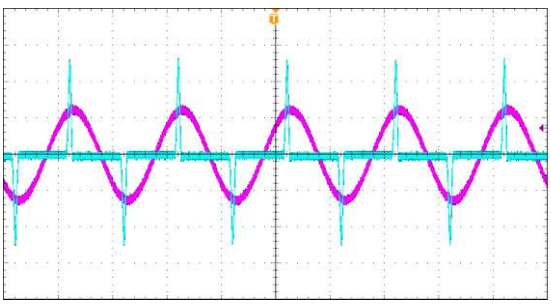
Capable of setting AC or DC output, as well as setting mixed AC&DC output mode, when no strict demand on output ripple, it can be used as DC power supply. Meanwhile, in some special application, DC output could achieve real-time positive and negative reversal.




AC/DC Output

## High Output Current Crest Factor

The surge current could reach 5-6 times of the rated current, especially suitable for inrush current testing, which could meet the requirement of load whose start current is high without adding high-capacity power supply (electrical machine, compressor and capacitive load).



High Output Current Crest Factor

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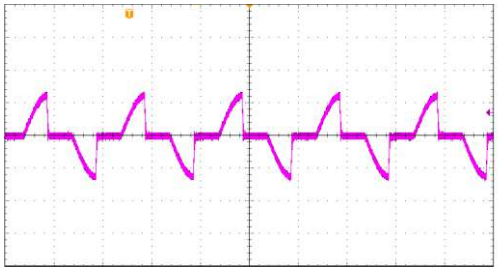
# Basic Functions(2)

## Dimmer Function

Support Dimmer function, which is applicable to conduct speed regulating or dimming verification test for electric motor, lamp and other products, it is applicable to production test as well, capable of simulating the user's real application scenarios to make it easier to find out the quality issue of the products.



Dimmer Function

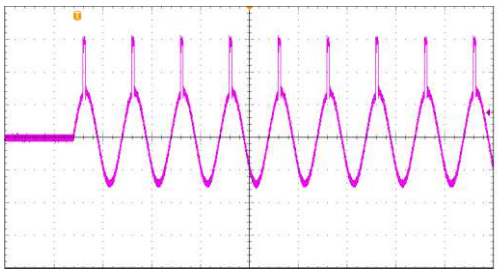
## Sweep Mode

Support max power point sweep mode, which is applicable to find out the max power point of the device under test under various voltage and frequency. It could control voltage and frequency change according to stepping ladder through setting the start/end voltage value, stepping voltage, start/end frequency, stepping frequency and time of each step. Voltage, frequency and other data at max power will be displayed on the screen after testing.

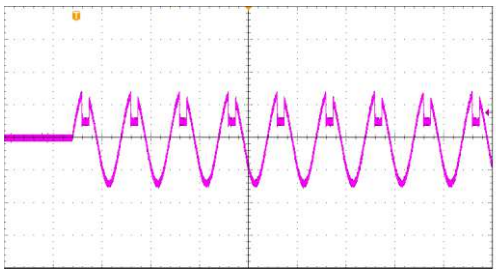

Max power point sweeping

## Transient mode

Transient mode simulates the impact on the device under test when turn on or turn off transient high power capacity load in power grid.



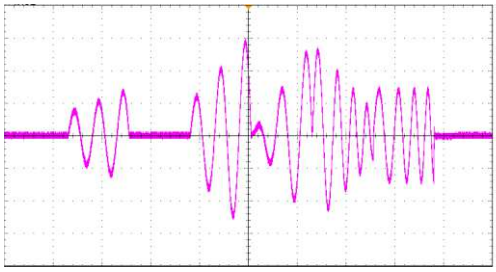
Voltage Spikes



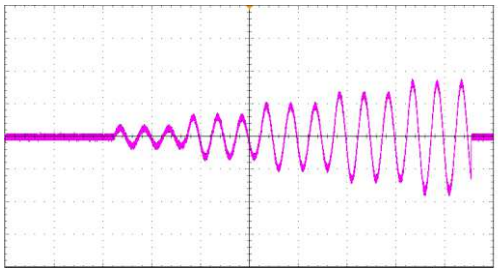
Voltage Sags

## Output Simulation Sequence and Disturbance Simulation

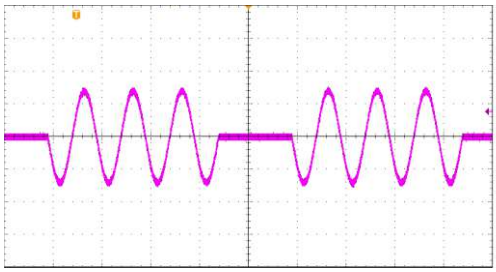
Provide powerful function to simulate power line disturbance.
Apply LIST mode to change output by recalling inner sequence file;
Apply STEP mode to change output value;
Apply PULSE mode to program special impulse voltage waveform.
Functions above are convenient for user to apply in test condition such as cycle dropout, transient spike and brown out, etc.



LIST Mode



STEP Mode



PULSE Mode

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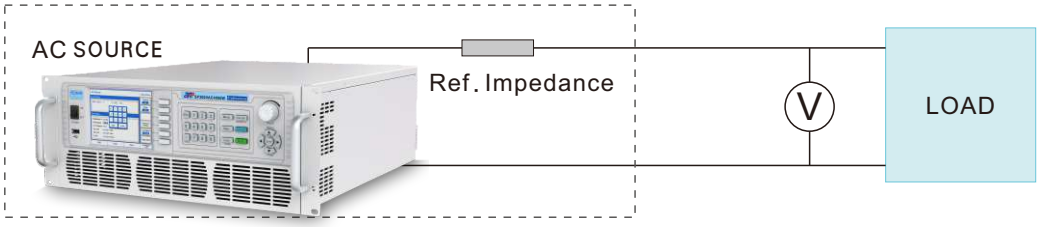
# Advanced Functions(1)

## Output Impedance (Applicable to Professional Version)

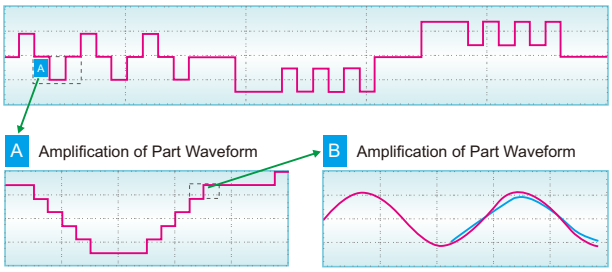
The default output impedance of programmable AC power source is very low, while in some application, user needs special output impedance. This series is equipped with output impedance function through front panel or monitoring software and set output resistance and inductance to simulate the special application of the impedance.




Output Impedance Function

## IEC Standard Test (Applicable to Professional Version)

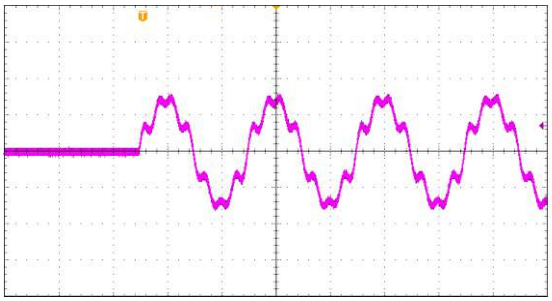
With built-in IEC standard test function, it is applicable to immunity test of power electronics products under abnormal condition. Standards below are contained and could be recalled directly. Standards: IEC61000-3-3 (test output impedance), IEC61000-3-2 (low output impedance), IEC61000-4-11 (voltage dip, Short interruption and voltage variations immunity test), IEC61000-4-14 (voltage fluctuation immunity test), IEC61000-4-28 (Variation of power frequency, immunity test), IEC61000-4-13 (harmonics/ Inter-harmonics low frequency immunity test).




IEC Standard Test

## Harmonics/Inter-harmonics Generate Simulation and Harmonics Measurement(Applicable to Professional Version)

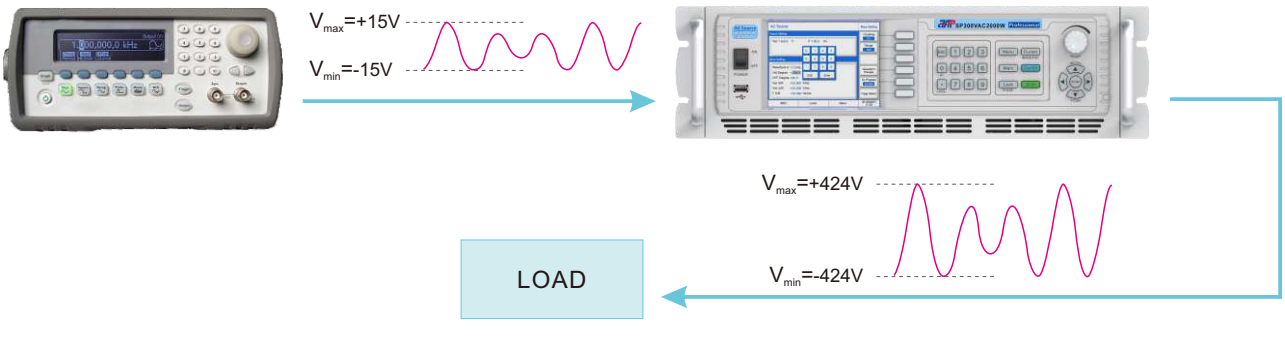
Support waveform synthesis edition, up to 40 orders of harmonics components based on 50Hz or 60Hz fundamental. The value and angle of each order could be set through front panel or monitoring software. Meanwhile, it supports inter-harmonics synthesis edition. On the basis of original voltage output, add another voltage component whose frequency is changeable, which is applicable to some interference simulation test. THD(total harmonic distortion) and harmonics value(2~40 orders) are displayed on the screen and monitoring software.



Harmonic Generate Simulation Waveform

## Amplifier Function (Remote I/O Card Optional)

User can set the output through simulation signal of external devices, Amplifier mode and Level mode could be applied flexibly. Programmable AC power source could realize real time output by tail after signal waveform, which is applicable to industry sector.




Amplifier Function

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# Advanced Functions(2)

- External control also contains synchronization signal output (3 channels) and analog input (6 channels) (Remote I/O Card Optional)

  Programmable AC power source could provide analog input under test simulation of PASS, FAIL and RUN status and user can control ON/OFF externally, force to shutdown, reset and upload 7 sets of stored parameters.

## Selection List

| OUTPUT | 2U | | | 3U | 4U | | |
|---|---|---|---|---|---|---|---|
| | 600W | 1000W | 1500W | 2000W | 3000W | 4000W | 5000W |
| 150VAC/300VAC | 5.6A/2.8A | 9.2A/4.6A | 13.8A/9.6A | 16A/8A | 27.6A/13.8A | 32A/16A | 46A/23A |

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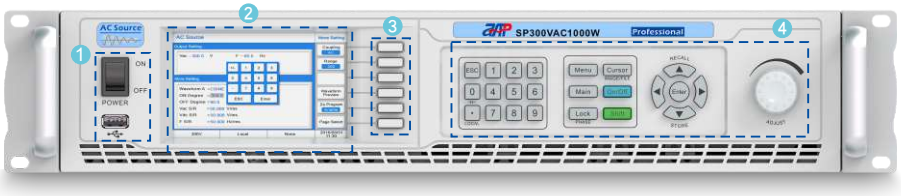
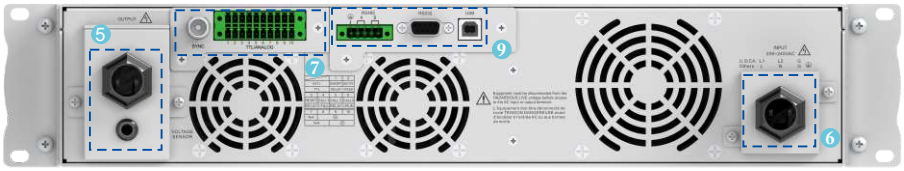
# Panel Introduction

- Front Panel Interface




- Back Panel Communication Interface and Input / Output Interface

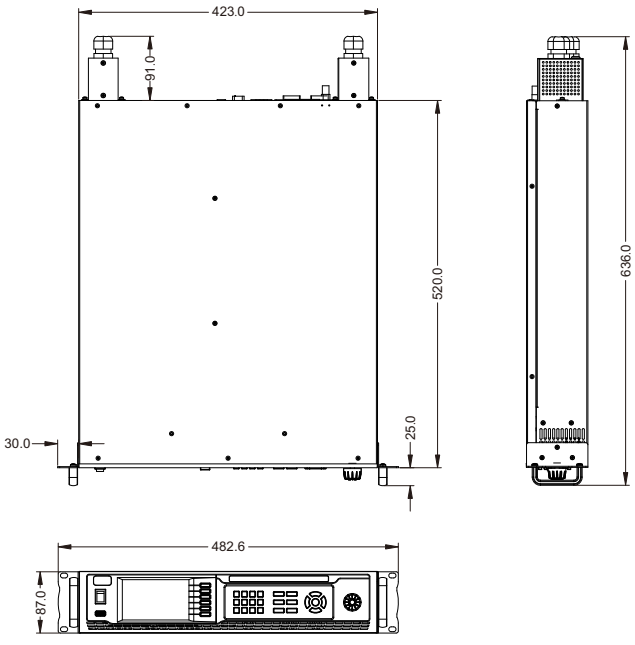


| Panel Introduction | |
|---|---|
| 1 | Power Switch(Up)<br>USB Storage Slot(Down) |
| 2 | Color Touch Screen |
| 3 | Multifunctional Keys |
| 4 | Numeric and Functional Keys |
| 5 | Output Terminal |
| 6 | AC Input Terminal |
| 7 | Remote I/O Card (Optional) |
| 8 | GPIB/LAN Communication Interface (Optional) |
| 9 | RS485/RS232/USB Communication Interface |

# Functions & Differences

| Functional description | Advanced Version | Professional Version |
|---|---|---|
| Output frequency range | 15-1000Hz | 15-1200Hz |
| Built in IEC standard | IEC61000-4-11 | IEC61000-4-11<br>IEC61000-4-13<br>IEC61000-4-14<br>IEC61000-4-28<br>IEC61000-3-2<br>IEC61000-3-3 |
| Harmonics/inter-harmonics generate simulation and measuring function | ✗ | ✓ |
| Output impedance function | ✗ | ✓ |
| Dimmer function | ✓ | ✓ |
| Max power point sweeping function | ✓ | ✓ |
| Transient mode | ✓ | ✓ |
| USB data load/upload and screen snap | ✓ | ✓ |
| CC mode | ✓ | ✓ |
| Capable of setting output slope of voltage and frequency | ✓ | ✓ |
| Capable of setting ON/OFF phase angle | ✓ | ✓ |
| Test mode | ✓ | ✓ |
| Output Simulation Sequence and power line Disturbance Simulation | Support LIST/PLUSE/STEP mode | |
| Amplifier Function | Support (Optional) | |
| External control function | Support (Optional) | |
| GPIB communication | Support (Optional) | |

# Dimensional Drawing




Top View | Side View

Front View

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# Monitoring Software

Monitoring software is capable of controlling all functions of programmable AC power source. The operation interface adopts guided design, which is open-and-shut. The system interface with right push design for hidden icons makes the operation screen more delicate without occupation of spare desk space.


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