SP300VAC600W
Programmable AC Source

SP300VAC600W 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. SP300VAC600W 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/PULSE/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.
- ◉ Built-in IEC61000-3-3/ IEC61000-3-2/ IEC61000-4-11/ IEC61000-4-14/ IEC61000-4-28/ IEC61000-4-13 standard test required waveform.
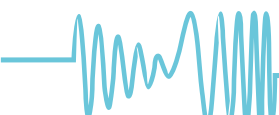
MODEL		SP300VAC600W Advanced	SP300VAC600W Professional
INPUT			
Voltage		90~265VAC	
Frequency		47~63Hz	
Phase		1 Phase	
Max.Current		10A	
Power Factor at 220VAC Input ,Full Load		≥0.91 Active PFC	
Efficiency		>82% (Peak) >80% at 220VAC,50Hz input/230VAC,50Hz output,Full Load	
OUTPUT			
AC Power		600VA	
Max.Current (r.m.s)	0~150V(L)	5.6A	
	0~300V(H)	2.8A	
Max.Current (Peak)	0~150V(L)	32.4A	
	0~300V(H)	16.2A	
Phase		1 Phase	
Total Harmonic Distortion (THD)		<0.5% (Resistive Load) at 15.0~70.0Hz and output voltage within the 80~140VAC at Low Range or the 160~280VAC at High Range <1% (Resistive Load) at 70.1~500Hz and output voltage within the 80~140VAC at Low Range or the 160~280VAC at High Range <1% (Resistive Load) at 501~1000Hz and output voltage within the 100~140VAC at Low Range or the 160~280VAC at High Range <2% (Resistive Load) at 1001~1200Hz and output voltage within the 100~140VAC at Low Range or the 160~280VAC at High Range Note: 1001~1200Hz only available to Professional Version Models	
Crest Factor(CF)		<6	
Load Regulation		±0.1%F.S. (Resistive Load) at 15~70Hz ±0.5%F.S. (Resistive Load) at 70.1~1200Hz 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	600W	
	Max.Current (L/H Range)	L 3.96A	
		H 1.89A	
	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	<250us	
Current OC Fold Mode	Resolution	0.01A	
	Accuracy	0.5% of setting +1.0%F.S.	
	Response Time	<1400ms	

MODEL		SP300VAC600W Advanced	SP300VAC600W Professional
Frequency	Range	15~1000Hz Full Range ADJ	15~1200Hz Full Range ADJ
	Resolution	0.1Hz at 15.0~99.9Hz, 1Hz at 100~1000Hz	0.1Hz at 15.0~99.9Hz, 1Hz at 100~1000Hz, 5Hz at 1001~1200Hz
	Accuracy	0.03% of setting	
Programmable Output Impedance		Not Support	0Ω +0mH~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	15~1000Hz	15~1200Hz
	Resolution	0.1Hz at 15.0~99.9Hz, 1Hz at 100~1000Hz	0.1Hz at 15.0~99.9Hz, 1Hz at 100~1000Hz, 5Hz at 1001~1200Hz
	Accuracy	0.1% of setting	
Current* (r.m.s)	Range	H 0.15A~5.6A	
		M -	
		L 0.1A~3A	
		mA -	
	Resolution	0.01A	
	Accuracy	0.4%+1.0%F.S.	
Current* (Peak)	Range	0A~32.4A	
	Resolution	0.01A	
	Accuracy	H 0.4%+1.0%F.S.	
		L 0.4%+1.5%F.S.	
Power	Range	0~600W	
	Resolution	0.1W	
	Accuracy	0.4% of setting +1.0%F.S. at PF>0.2, Voltage >5V	
Power Apparent (VA)	Range	0~612VA	
	Resolution	0.1VA	
	Accuracy	Voltage∗Irms, Calculated value	
Power Resistive (VAR)	Range	0~612VAR	
	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

MODEL		SP300VAC600W Advanced	SP300VAC600W 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 Trans-Volt : -212V~+212V(L), -424V~+424V(H), Resolution : 0.1V Trans-Time : 0.0~66.5ms @15Hz, Resolution : 0.1ms 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 currently. Pls refer to APM website for the lastest update closely once it is available.	
Series Output for 1 Phase		Not support currently. Pls refer to APM website for the lastest update closely once it is available.	
Link Output for 3 Phase		Not support currently. Pls refer to APM website for the lastest update closely once it is available.	
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. 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)		423.0∗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.
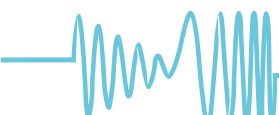
Basic Functions(1)

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.
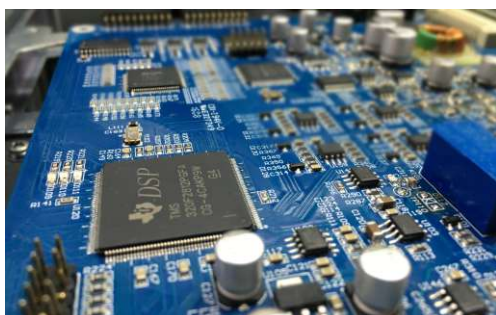


DSP+CPLD

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.
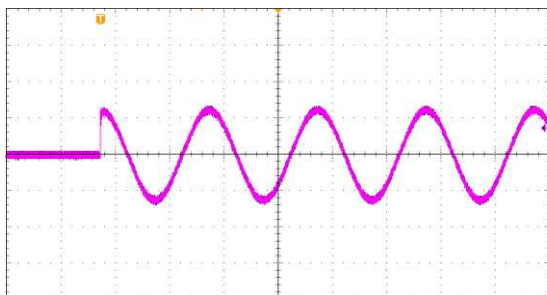
Adjustable Phase Angle
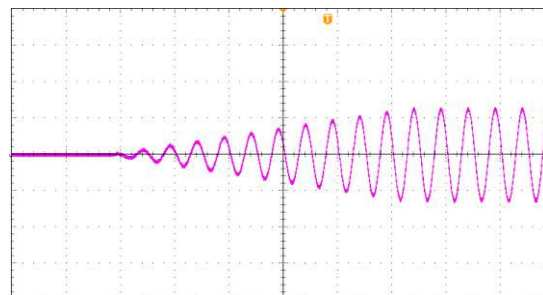
Adjustable Slope

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.
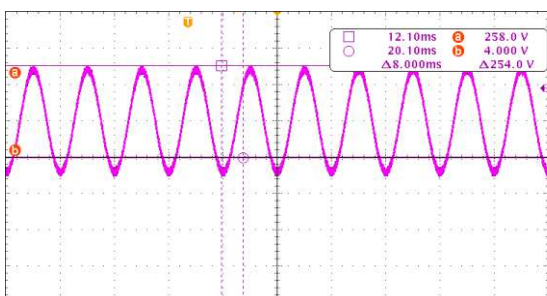
AC/DC Output

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).
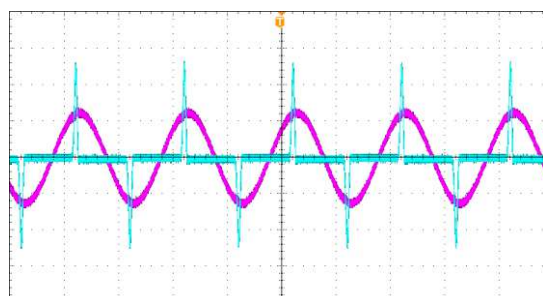

High Output Current Crest Factor

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.
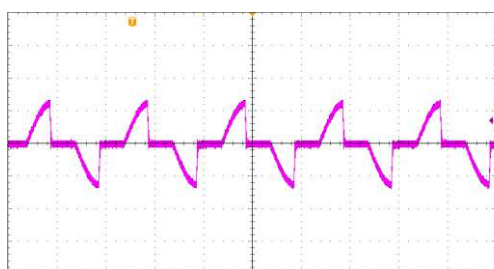

Dimmer Function

■ 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.
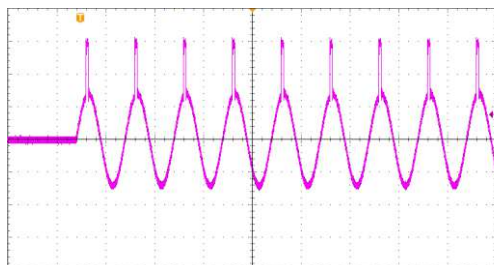

Voltage Spikes
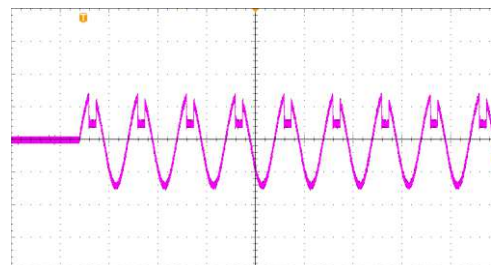
Voltage Sags

## ■ 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.
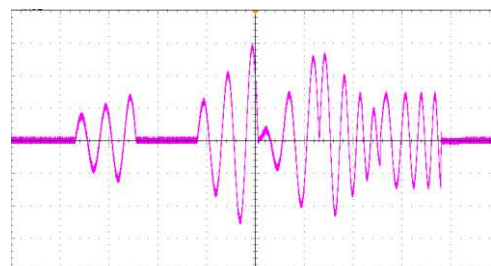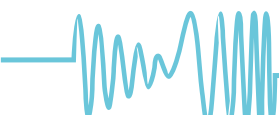

LIST Mode
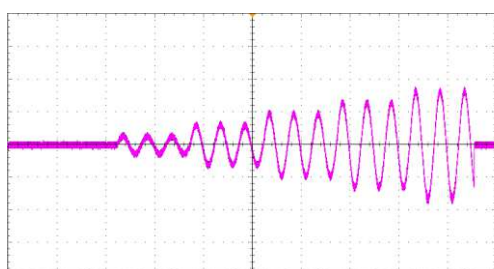
STEP Mode
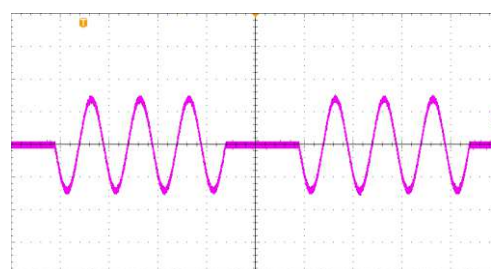
PULSE Mode

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.

AC SOURCE Ref. Impedance V LOAD

Output Impedance Function
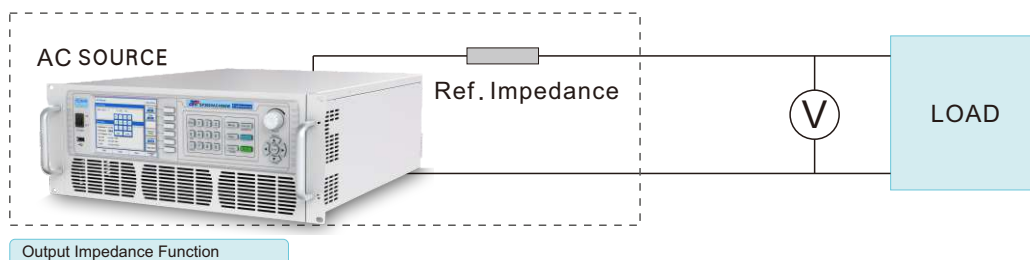
■ IEC Standard Test (Applicable to Professional Version)

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).

A Amplification of Part Waveform   B Amplification of Part Waveform

IEC Standard Test
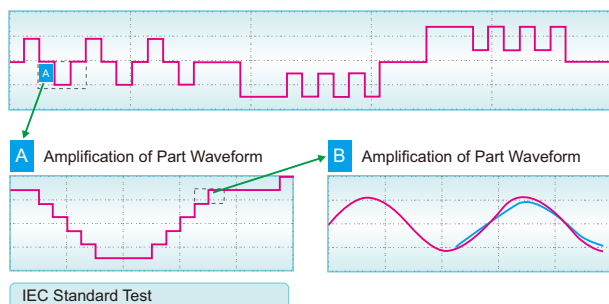
■ Harmonics/Inter-harmonics Generate Simulation and Harmonics Measurement(Applicable to Professional Version)

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
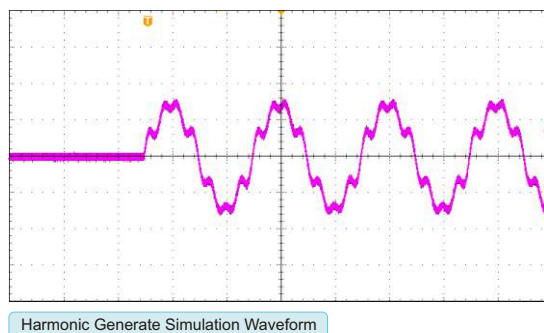
■ Amplifier Function (Remote I/O Card Optional)

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.

V_{max}=+15V
V_{min}=-15V

V_{max}=+424V
V_{min}=-424V
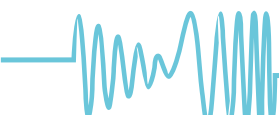
LOAD

Amplifier Function
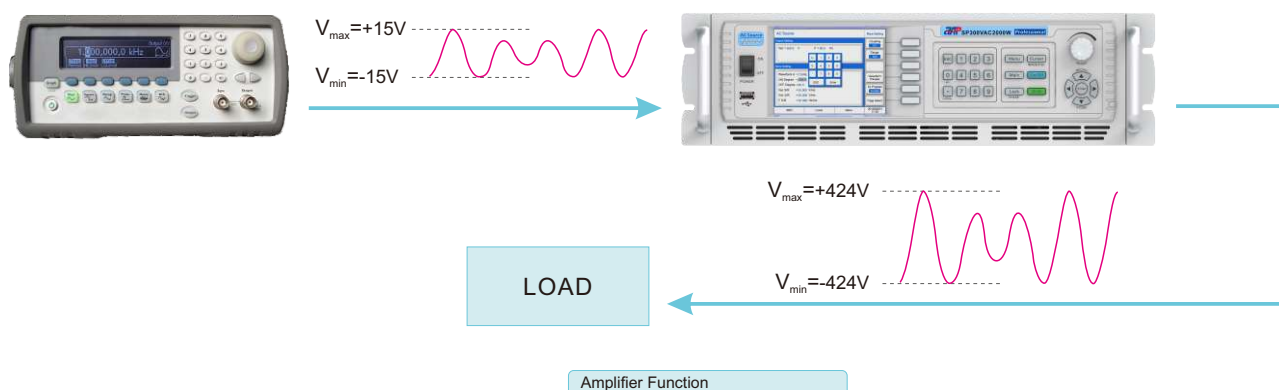
Advanced Functions(2)

■ 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.
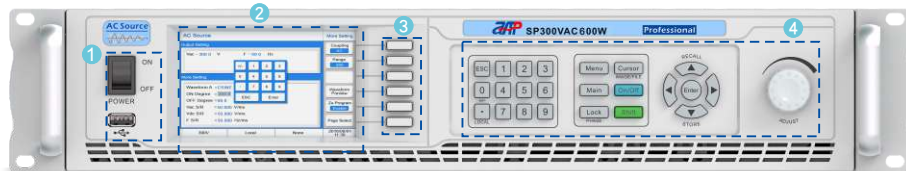
Selection List

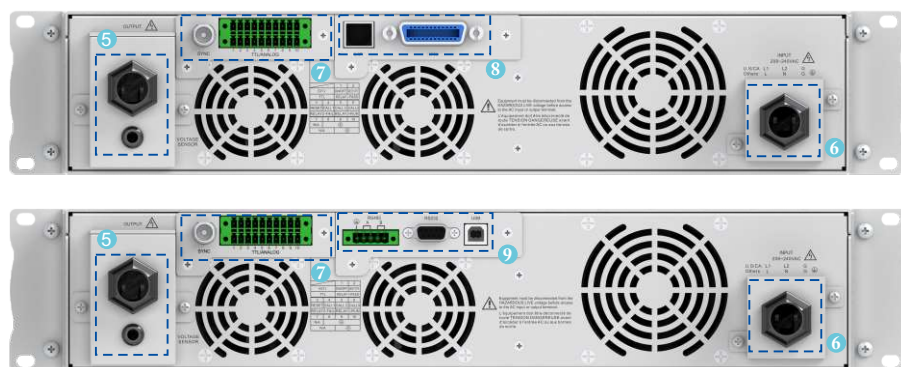| OUTPUT	2U			3U	4U		
	600W	1000W	1500W	2000W	3000W	4000W	5000W
150VAC/300VAC	5.6A/2.8A	9.2A/4.6A	13.8A/6.9A	16A/8A	27.6A/13.8A	32A/16A	46A/23A

APM Technologies

Panel Introduction

- Front Panel Interface

- Back Panel Communication Interface and Input / Output Interface

| Panel Introduction	
1	Power Switch(Up) 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 IEC61000-4-13 IEC61000-4-14 IEC61000-4-28 IEC61000-3-2 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

423.0
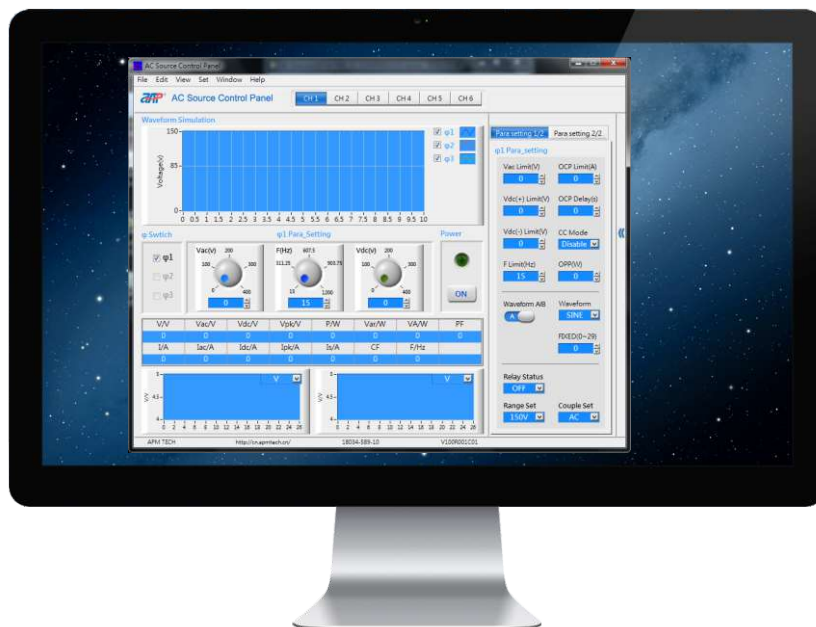91.0
520.0
30.0
25.0
636.0
482.6
87.0
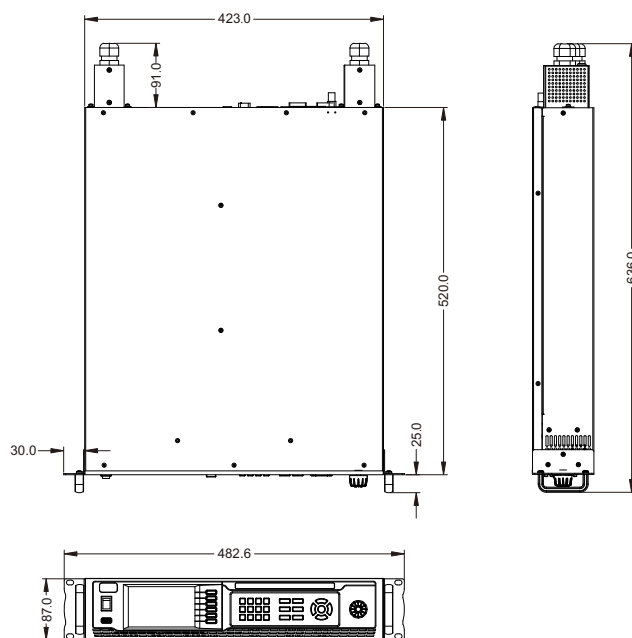
Top View | Side View

Front View
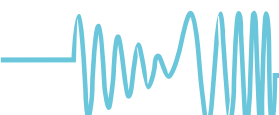
Monitoring Software

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.