Data Sheet

Programmable AC Power Source

Model 9801

USB | RS232 | LAN

The 9801 is both a programmable AC power source and measurement tool in a compact benchtop package. This fully programmable linear AC source delivers up to 300 VA through its universal line output terminal on the front and output connector on the rear. The output can be varied from 0 to 300 V with 0.1 V resolution, with adjustable start and stop phase angles from 0 to 360 degrees and maximum current of 3 A. The output frequency can be adjusted from 45 Hz to 500 Hz. The bright VFD display shows Vrms, Irms, Ipeak, frequency, power factor (PF), apparent power, true power and elapsed output time.

The AC source provides a power line disturbance (PLD) simulator, list mode, and sweep mode for simulation of common power grid faults and disturbances. A built-in dimmer function is also available for testing motors and LEDs.

List mode can be used to generate sequences of waveforms such as surges, sags, and frequency disturbances. The programmed list can be triggered from the front panel or via BNC connector on the rear.

Standard USB, RS232, and LAN interfaces can be used to remotely control the source via a PC. Free application software and LabVIEW driver are available to reduce programming time and increase productivity.

Common applications

The 9801 AC power source is suitable for evaluating transformers, TRIACs, SCRs and passive components as well as production, R&D, service, and pre-compliance testing.

Features

- 300 VA, 300 V, low distortion, single phase, AC power source delivering a maximum of 3 Arms / 12 Apeak
- Output frequency adjustable from 45 Hz – 500 Hz
- Select 150 V / 300 V autoranging or 300 V range operation for continuous sweep from 0 - 300 V
- Displays Vrms, Irms, Ipeak, frequency, PF, apparent power, true power, and elapsed output time
- Adjustable phase angle control
- Programmable voltage and frequency limit settings
- Built-in PLD and dimmer simulation
- Voltage and frequency sweep mode
- List mode: 10 user-defined programs with up to 100 programmable steps each
- BNC I/O for external triggering, output status indication/control, and synchronization
- Save and recall up to 100 instrument settings
- Standard USB (USBTMC-compliant), RS232, and LAN interfaces
- OVP/OCP/OPP/OTP protection modes and key lock function
- Compact 19" half-rack form factor allows for side-by-side rack mounting of two units
- Pre-compliance testing for voltage dips and frequency simulations according to IEC61000-4-11 / 4-14 / 4-28
- LabVIEW driver and softpanel for remote control available

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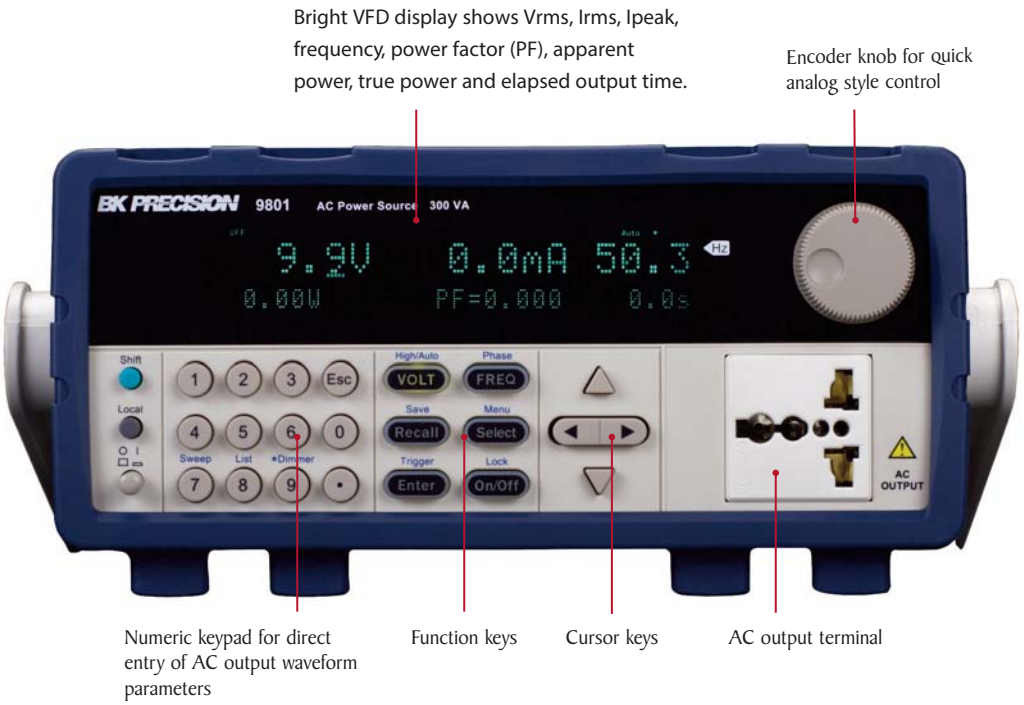
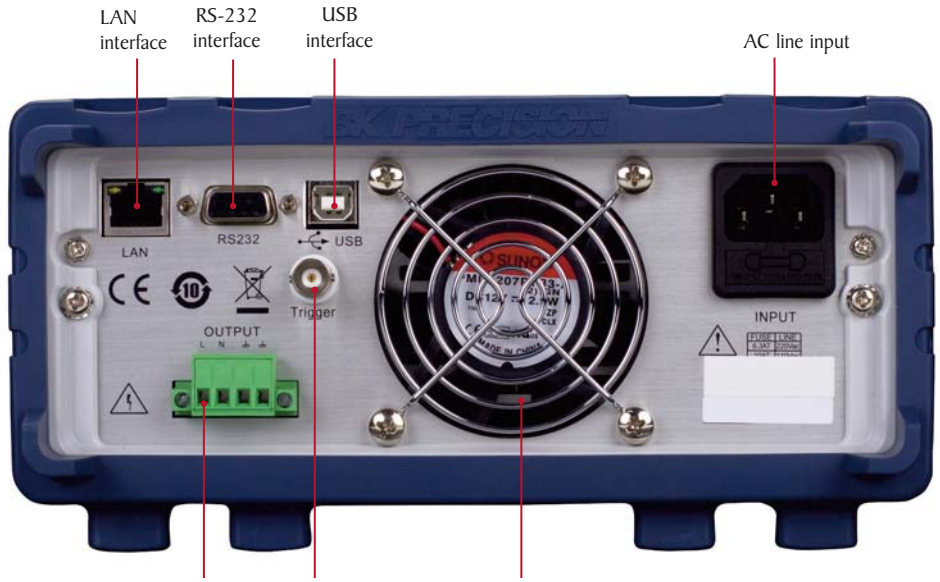
Front panel



Rear panel



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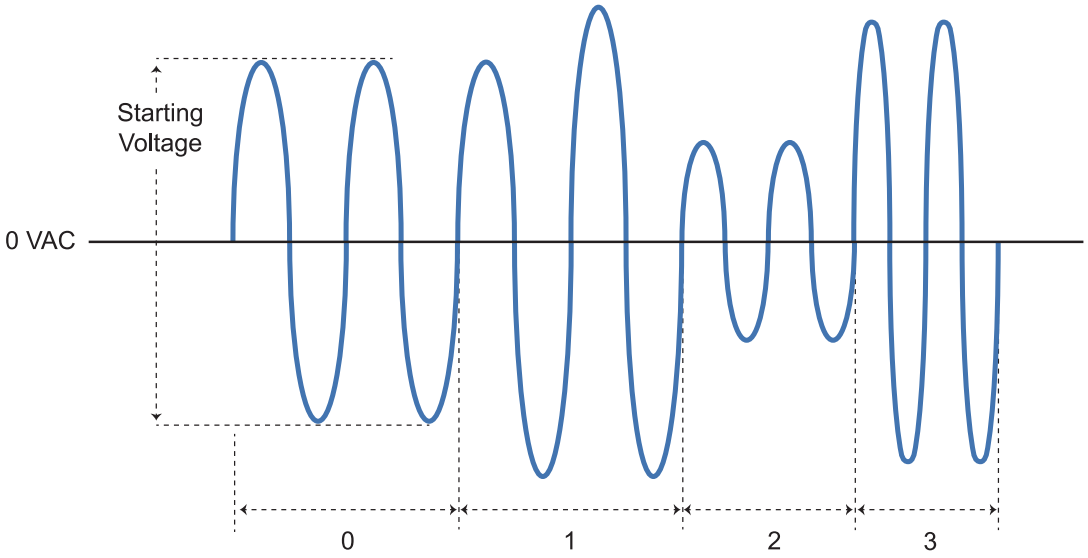
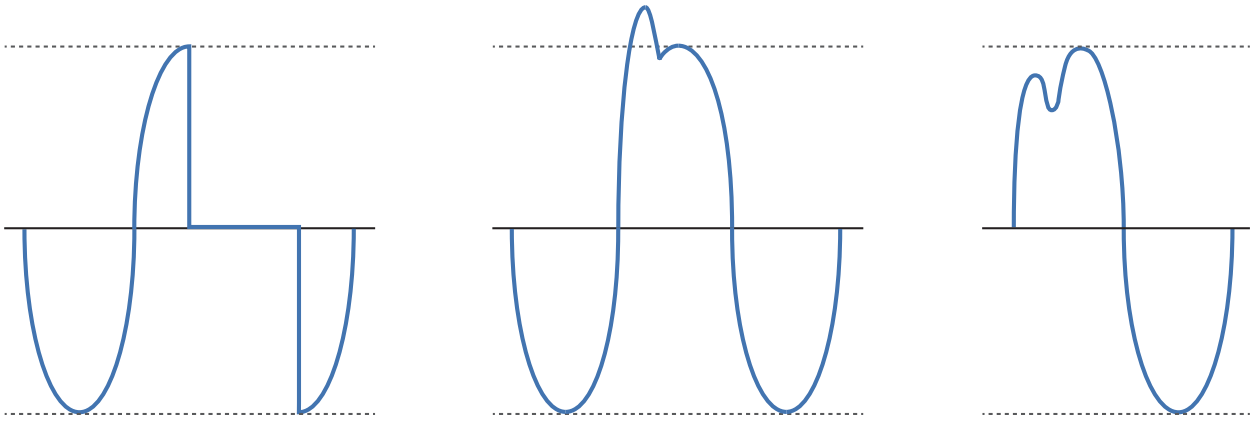
List mode

List mode supports the generation of more complex sequences with varying times, amplitudes, and frequencies. Up to 100 steps in 10 groups can be saved and executed. This allows the user to build a wide range of waveforms in a sequence to simulate grid faults and disturbances. The programmed list can be triggered from the front panel or via BNC connector on the rear.



List Mode Steps



PLD Waveforms

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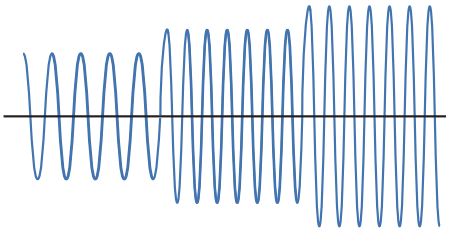
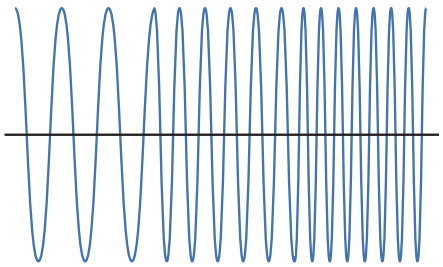
Sweep mode

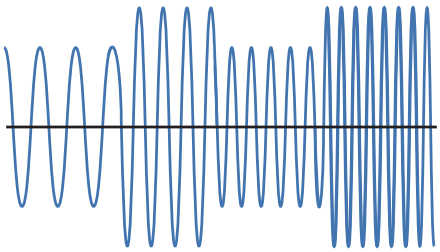
The sweep function is ideal for testing the efficiency of switching power supplies or capturing the maximum operating power requirements of the device under test. User-defined voltage and frequency sweeps can be created independently or combined. Up to 10 sweep profiles can be stored and recalled.



Voltage Sweep



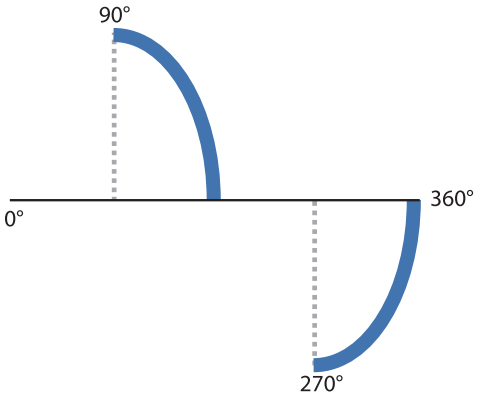
Frequency Sweep



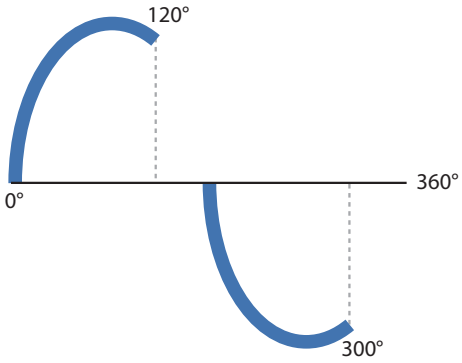
Voltage plus Frequency Sweep

Dimmer simulation

The dimmer feature can be used for many test applications such as motor control and lighting. By controlling the phase cut-off of the AC sine wave's leading or trailing edge, the dimmer simulation varies the RMS voltage supplied to the load under test. The phase cut-off can be adjusted for leading or trailing edge dimming between 0 – 180 degrees.



Leading Edge Dimmer at 90°



Trailing Edge Dimmer at 60°

Application software

PC software is provided for front panel emulation, generating and executing list, PLD, and sweep profiles, or logging measurement data without the need to write source code.

Supports NI Data Dashboard for LabVIEW

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Specifications

Model		9801
AC Input		
Phase		Single
Voltage		110 / 220 VAC ± 10%
Frequency		47 - 63 Hz
Max. Current		8 A max.
Power Factor		0.5 (typical)
AC Output		
Max. Power		300 VA
Max. Current (rms)	0 - 150 V	3.0 A
	0 - 300 V	1.5 A
Max. Current (peak)	0 - 150 V	12 A
	0 - 300 V	6 A
Crest Factor		≥4
Phase		Single
Total Harmonic Distortion (THD)		≤0.5% at 45 - 500 Hz (Resistive load)
Line Regulation		0.1% max for a ±10% line change
Load Regulation		≤0.5% FS (Resistive load)
Response Time		<100 μs
Programming		
Voltage (rms)	Range	0 -300 V, 150 V / 300 V (Auto)
	Resolution	0.1 V
	Accuracy	±(0.2% + 0.6 V)
Frequency	Range	45 - 500 Hz
	Resolution	0.1 Hz at 45 - 99.9 Hz 1 Hz at 100 - 500 Hz
	Accuracy	0.1 Hz
Phase Angle	Range	0 - 360°
	Resolution	0.1°
	Accuracy	±1° (45 - 65 Hz)
Measurements		
Voltage (rms)	Range	0 - 300 V
	Resolution	0.1 V
	Accuracy	±(0.2% + 0.6 V)
Current (rms)	Range	Low: 120.0 mA / Mid: 1.200 A / High: 3.00 A
	Resolution	Low: 0.1 mA / Mid:1 mA / High: 10 mA
	Accuracy	Low: ±(0.2% + 0.4 mA) / Mid: ±(0.2% + 4 mA) / High: ±(0.2% + 20 mA)
Current (peak)	Range	0 - 12 A
	Resolution	0.01 A
	Accuracy	±(1% + 120 mA)
Power (Watts)	Resolution	Low: 0.01 W / Mid:0.1 W / High: 1 W
	Accuracy (47 - 65 Hz)	Low: ±(0.2% + 0.05 W) / Mid: ±(0.2% + 0.5 W) / High: ±(0.2% + 2 W)
General		
Memory		10 Locations
BNC I/O		External trigger input, sync output, output status indicator / control
Interface		LAN, USB, RS232
Operating Temperature		32 °F to 104 °F (0 °C to 40 °C) ≤ 80% R.H.
Storage Temperature		-4 °F to 158 °F (-20 °C to 70 °C) ≤ 85% R.H.
Environmental conditions		For indoor use only, max humidity 80%, no condensation
Dimensions (W x H x D)		8.45" x 3.47" x 17.83" (214.5 x 88.2 x 453.5 mm)
Weight		9.5 kg (20.94 lb.)
		Two-Year Warranty
Standard Accessories		Power cord, instruction manual, test report & certificate of calibration
Optional Accessories		IT-E151 rack mount kit

Note: All specifications apply to the unit after a temperature stabilization time of 15 minutes over an ambient temperature range of 23 °C ± 5 °C.

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