

# Specifications

# EC750SA/EC1000SA

The following conditions are provided unless otherwise noted.

- Signal source: INT (internal signal source) • Output waveform: sine wave
- Load: resistance load for power factor 1 • Output terminal: Rear panel output terminal block

## AC/DC Mode, Signal Source

AC/DC Mode	AC, AC+DC
Signal Source	INT(Internal), EXT(External), ADD(Internal and external), SYNC(External synchronization)

## Power Output

<b>AC Output</b>	
Output Power	<b>EC750SA:</b> 750 VA <b>EC1000SA:</b> 1000 VA (When the input is from AC180 V to 250 V, hereinafter referred to as "AC 200V input system") When the input is from AC 100 V to 180V (hereinafter referred to as "AC 100 V input system"), output power is limited to 750 VA.
Rated Output Voltage	100 Vrms/200 Vrms
Output Range	100 V range/200 V range
Voltage Setting Range *1 *2	0.0 to 155.0 Vrms/0.0 to 310.0 Vrms (Resolution 0.1 Vrms)
Voltage Accuracy *3	± (0.5% of set + 0.6 Vrms/1.2 Vrms)
Max. Current *4 *5 *6 *7	10 Arms/5 Arms
Max. Peak Current *4 *8 *9 *10	<b>EC750SA:</b> 30 Apk/15 Apk <b>EC1000SA:</b> 40 Apk/20 Apk
Frequency Setting Range *11	1.0 Hz to 550.0 Hz (Resolution 0.1 Hz)
Frequency Accuracy	±0.01% of set (1.0 Hz to 550.0 Hz, 23°C±5°C)
Output Waveform *11	Sine wave, square wave, arbitrary wave (16 types)
Output On Phase *11	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg.)
DC Offset	±50 mV/±100 mV (typ., fine adjustment available, AC mode)
Small Amplitude Frequency Response *12	AC mode: 1% (40 Hz to 550 Hz) AC+DC mode: 1% (40 Hz to 550 Hz)

<b>DC Output</b>	
Output Power	<b>EC750SA:</b> 750 W <b>EC1000SA:</b> 1000 W (AC 200 V input system) (For the AC 100 V input, output power is limited to 750 W)
Rated Output Voltage	100 V/200 V
Voltage Setting Range *1 *2	-220.0 V to +220.0 V/-440.0 V to +440.0 V (Resolution 0.1 V)
Voltage Accuracy *13	± (0.5% of set + 0.6 V/1.2 V)
Max. Current *4 *5	10 A/5 A
Max. Peak Current *4 *8	<b>EC750SA:</b> 30 Apk/15 Apk <b>EC1000SA:</b> 40 Apk/20 Apk
<b>Output Voltage Stability</b>	
Fluctuation with output current	45 Hz to 65 Hz: Within ±0.15%, DC and 40 Hz to 550 Hz: Within ±0.5% <b>EC750SA:</b> In the case that the output current is changed and the output power is changed from 0% to 100% of the maximum output power, at the output terminal) <b>EC1000SA:</b> In the case that the output current is changed from 0% to 100% of the maximum current, at the output terminal, rated output voltage)
Fluctuation with input voltage	Within 0.2% (power input voltage: 100 V/120 V/230 V, no load, rated output)
Output Voltage Distortion Factor	0.5% or lower (50 Hz/60 Hz, 50% or higher of rated output voltage)
Output terminal *14	Terminal with M4 screws (rear panel), AC outlet (universal type, front panel)

\*1 Signal source: INT, SYNC or ADD, no load \*2 The AC settings (peak value) + DC setting that can be set are within the voltage setting limit range \*3 AC Mode, 50 Hz/60 Hz, 23°C±5°C, Sine wave, no load, 10 V to 155 V/20 V to 310 V  
\*4 The limit on max. output power may cause a reduction in max. output current and max. peak current (EC1000SA for power input AC100 V) \*5 For At or above the rated output voltage, the limit on max. output power reduces max. output current. (EC1000SA only) \*6 In the case of 40 Hz or lower, or 400 Hz or lower, max. output current may decrease. \*7 The RMS current of AC + DC is max. output current \*8 For At or above the rated output voltage, the limit on max. output power reduces max. output peak current. \*9 For a capacitor input type rectifier circuit (crest factor = 4)  
\*10 In the case of 45 Hz or lower, or 65 Hz or higher, max. output peak current may decrease. \*11 Signal source: INT, SYNC or ADD, no load \*12 Signal source: INT and SYNC, 100 V range, output voltage: 20 Vrms, 50 Hz rating  
\*13 Signal source: AC+DC, AC0 V setting, 23°C±5°C, no load, -220 V to -10 V, +10 V to +220 V/-440 V to -20 V, +20 V to +440 V \*14 Use AC outlet for AC (AC0 V to 250 V). When DC is included, use screw terminal on the rear panel.

## Power Input

Voltage	100 V to 230 V±10% (Max. voltage 250 V), Overvoltage Category II
Frequency	50 Hz/60 Hz ±2 Hz (single phase)
Power Factor (typ.) *15	0.95 or higher (at AC100 V input), 0.90 or higher (at AC200 V input)
Max. Power Consumption	<b>EC750SA:</b> 1.2 kVA or lower <b>EC1000SA:</b> 1.4 kVA or lower

\*15 The rated output voltage, the resistance load at the maximum current

## Measurement Function

<b>Voltage</b>	
RMS Value (AC+DC: rms)	Full scale: 250.0 V/500.0 V, Resolution: 0.1 V
Average (AC+DC: avg)	Full scale: ±250.0 V/±500.0 V, Resolution: 0.1 V
Peak Value (Max/Min Individual: pk)	Full scale: ±250 V/±500 V, Resolution: 1 V
<b>Current</b>	
RMS Value (AC+DC: rms)	Full scale: 15.00 A, Resolution: 0.01 A
Average (AC+DC: avg)	Full scale: ±15.00 A, Resolution: 0.01 A
Peak Value (Max/Min Individual: pk)	Full scale: ±45.0 A, Resolution: 0.1 A Hold the maximum values of   max   and   min
<b>Power</b>	
Effective (W)	Full scale: 1200 W, Resolution: 1 W
Apparent (VA)	Full scale: 1400 VA, Resolution: 1 VA
Reactive (var)	Full scale: 1400 var, Resolution: 1 var
Load Power Factor	Measurement range: 0.00 to 1.00, resolution: 0.01
Load Crest Factor *16	Measurement range: 1.00 to 50.00, resolution: 0.01
External Synchronization Frequency (SYNC mode only)	Measurement range: 38.0 to 525.0 Hz, resolution: 0.1 Hz
Output Harmonic Current *17	Measurement range: Up to 40th order, Full scale: 15 Arms and 500%

\*16 Calculated as output voltage RMS value x output current RMS value \*17 This measurement doesn't comply with the IEC standards.

- [set] indicates a setting value.
- A value without the accuracy is the nominal value or representative value (shown as typ.)
- When two values are indicated with a slash, this means that specifications vary depending on the output range. The value before the slash is for 100 V specifications, and the value after the slash is for 200 V specifications.

## Current Limiter

<b>Peak</b>	
Positive current	<b>EC750SA:</b> +10.0 A to +31.5 A/+5.0 A to +15.8 A (Resolution: 0.1 A) <b>EC1000SA:</b> +10.0 A to +42.0 A/+5.0 A to +21.0 A (Resolution: 0.1 A)
Negative current	<b>EC750SA:</b> -31.5 A to -10.0 A/-15.8 A to -5.0 A (Resolution: 0.1 A) <b>EC1000SA:</b> -42.0 A to -10.0 A/-21.0 A to -5.0 A (Resolution: 0.1 A)
Limiter operation	When limiter is operating, output voltage is clipped.
<b>RMS</b>	
Setting range	1.0 A to 10.5 A (initial value: 10.5 A)/1.0 A to 5.3 A (initial value: 5.3 A), (Resolution 0.1 A)
Limiter operation	When limiter is operating, suppresses output voltage.

## Sequence Function

Sequence function works with AC-INT, AC+DC-INT.

Number of Memories	One sequence per AC/AC+DC mode at both 100 V and 200 V range.
Number of Steps	255 max. (for each sequence)
Setting Range of Step Time	0.1 ms to 999.9999 s (Resolution: 0.1 ms)
Operation within Step	Constant, keep, linear sweep
Parameters	DC voltage, AC phase voltage, frequency, waveform, synchronous step output (2 bit)
Jump count	1 to 999 or infinite
Sequence Control	Start, stop, hold, branch

## Control Software

<b>Functions</b>	
Remote Control	Parameter setting, store/recall, status monitoring
Logging	Reads and saves measured values.
Arbitrary Waveform	Waveform creation and edit, transfer, display and file operations
Sequence	Sequence data creation, edit, save, transfer, execution control
<b>Operating Requirements</b>	
CPU	300 MHz min. (CPU clock needed for the correspondence OS or faster)
Memory	128 MB min.
Free Hard Disk Space	64 MB min.
OS	Microsoft Windows XP/7 (32 bit), Microsoft Windows 7 (64 bit)
Disk Drive	CD-ROM drive
Interface	USB 1.1 or higher

## Other Functions

<b>Setting range limit function *11</b>		
Voltage	Positive voltage setting range	+0.1 V to +220.0 V/ +0.1 V to +440.0 V (Resolution: 0.1 V)
	Negative voltage setting range	-0.1 V to -220.0 V/ -0.1 V to -440.0 V (Resolution: 0.1 V)
Frequency (Lower limit≤Upper limit)	Upper limit setting range	1.0 Hz to 550.0 Hz (Resolution: 0.1 Hz)
	Lower limit setting range	1.0 Hz to 550.0 Hz (Resolution: 0.1 Hz)
<b>Arbitrary Wave</b>		
Number of memories	16 (nonvolatile)	
Waveform length	4096 words	
<b>External Signal Input</b>		
External Signal Input (EXT/ADD mode)	Gain setting range: 0.0 to 220.0 times/0.0 to 440.0 times (Resolution: 0.1) Frequency range: DC to 550 Hz (sine wave)	
External Sync Input (Sync mode)	Sync signal source: external sync signal (EXT) or power input (LINE) Sync frequency range: 40 Hz to 500 Hz	
Memory Function	Store and recall settings, Basic settings: 30	
Protections	Protective operation for abnormal output, power unit error, internal control error, and abnormal internal temperature	
External Control I/O	Enables control of the system using external signals. Control input, state output	
Interface	USB (USB/TMC), RS-232	
LCD Display	White or blue base color.	
Others	Beep, keylock, output setting at power-on, reset function, self test function	

## Generals

Withstanding Voltage and Insulation Resistance	AC1500 V, Insulation Resistance : 30 MΩ or higher (DC 500 V)
Operating Temperature/Humidity	0°C to +40°C/5% to 85%RH (absolute humidity 1 to 25 g/m³, no condensation)
Dimensions (mm)	258(W)×176(H)×440(D) (not including protrusions)
Weight	Approx. 9.7 kg
Safety	EN61010-1:2010
EMC	EN61326-1:2006 (Group 1, Class A) EN61000-3-2:2006 + A1:2009 + A2:2009 EN61000-3-3:2008
RoHS	Directive 2011/65/EU
Accessories	Operation manual, control software, power cord set 1 (15 A/125 V), power cord set 2 (10 A/250 V, without plug, EC1000SA only)

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# NF Corporation

● Head Office  
6-3-20 Tsunashima Higashi, Kohoku-ku, Yokohama 223-8508, Japan  
<http://www.nfcorp.co.jp/english/>

NF Techno Commerce Co., Ltd. International Sales Division

Meiko Building, 2-1-13 Nishi-Kohji, Furo, Teshima-ku, Tokyo 171-0021, Japan  
Tel: 81-3-3971-1100 Fax: 81-3-3971-1831

[www.valuetronics.com](http://www.valuetronics.com)

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