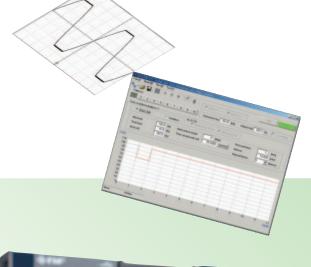


PROGRAMMABLE AC/DC POWER SOURCE

P-STATION/ES series







Ideal for EMC testing, for example low-frequency immunity testing, harmonic frequency immunity testing, harmonic frequency immunity testing, harmonic frequency immunity testing, and flicker and for power or ideal for power measurement. Also ideal for power measurement. Also ideal for power of various types, and as CVCF for anechoic chambers.

NF Corporation



power source for a functionality, perform

ES series high-performance power sources for testing and measurement applications deliver a stable supply of AC or DC power, functions for simulating sudden voltage fluctuations and simultaneous voltage-frequency sweeps, and a variety of measurement functions. The series lineup ranges from singlephase 2 kVA to three-phase 60 kVA models. They are available in either a component style that allows the power output to be increased after installation, or in a space-saving cabinet style.

Main Application

- Low Frequency Immunity Test (IEC 61000-4 series)
- Harmonic Current Measurement and Flicker Measurement (IEC 61000-3-2 / IEC 61000-3-3)
- As CVCF for anechoic chambers and for production lines

Same functions and performance are provided in two styles Enriching Lineup in Two Styles to Choose from

	Component Style	Cabinet Style (S or L type)
Single-Phase Systems	2 kVA to 20 kVA (Increment of 2 kVA) Basic: ES2000S Single-phase master (2 kVA) ES2000B Booster (2 kVA) added	6 kVA to18 kVA (5 types) 6 kVA (ES6000S) S type×1 8 kVA (ES8000S) S type×1 10 kVA (ES10000S) L type×1 12 kVA (ES12000S) L type×1
Three-Phase Systems	6 kVA to 60 kVA (Increment of 6 kVA) Basic: ES2000U (2 kVA)×1 ES2000P (2kVA)×2 3 units of ES2000B (2kVA) are added	18 kVA (ES18000S) S type×1 + L type×1 24 kVA, 36 kVA 24 kVA (ES24000T) S type×3 36 kVA (ES36000T) L type×3
Three-/ Single Phase Systems	Three-phase 6 kVA system equipped with optional ES4439 distribution unit	6 kVA, 12 kVA, 18 kVA 6 kVA (ES6000W) S type×1 12 kVA (ES12000W) L type×1 18 kVA (ES18000W) S type×1+L type×1

^{*} See P.5 and P.6 for lineup and specifications.

Covering broad range

Output Voltage and Output Frequency

With broad-ranging output voltage and output frequency, our programmable AC/DC power source can be used in wide range of applications such as converting frequency for domestic use, converting voltage of devices to be exported, and furthermore, for testing and adjusting devices in aircraft and vessels.

Output Voltage Range (AC)	Resolution	Οι
100 V range : 0 V to 150 V	0.1 V	
200 V range : 0 V to 300 V	0.1 V	

Output Frequency Range	Resolution
5 Hz to 1100 Hz	0.01 Hz

For testing DC/DC converters

DC Output

In addition to AC output, our programmable AC/DC power source can output in DC. By switching the mode, single unit can serve both as AC power source and DC power source.

DC Output Voltage Range	Resolution
100 V range: 0 V to +230 V	0.1 V
200 V range : 0 V to +406 V	0.1 V
200 1 141190 : 0 1 10 1	0.1 4

Single system can be used in two ways

Three-/Single-Phase Function

Three-phase 6 kVA system in component style can be equipped with three-/single-phase switching function (ES4439 Distribution Unit, option). Three-phase 6 kVA, 12 kVA and 18 kVA systems in cabinet style are equipped with three-/single-phase switching function in the standard specification.

No external measuring instrument required

Measurement Function

Various parameters requiring external measuring instruments such as voltage applied to load, consumed current, power consumption, and power factor of load can be measured with this unit alone.

- Three measurement items can be displayed simultaneously.
- Setting can be changed during measurement. For example, you can make combined settings such as "adjust output

voltage so that the power consumption at load is at the target value".

	Range
AC	Voltage (rms value, peak value), Current (rms value, peak value), Effective power, Apparent power, Power factor
DC	Voltage, Current, Apparent power

* See P.5 and P.6 for specifications.



Detecting errors to protect load and power source

Protective Circuit

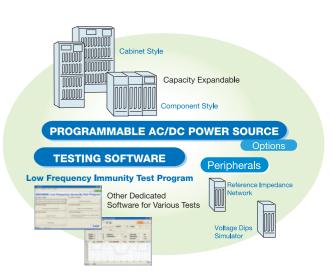
A protective circuit is included to protect load and power source against the accidents caused by rise in ambient temperature and drop in power source voltage. Output is restricted immediately against temporary overcurrent, and the output automatically returns to normal level as soon as the error is cleared.

Output current, Output element loss, Area of safe operation for output element. Internal element temperature. Power source

The ES series Program mable AC/DC Power Source, suitable as a variety of applications, provides superior ance, and ease of use.

- Single-phase 2 kVA to 20 kVA, Three-phase 6 kVA to 60 kVA. Single-/Three-phase switchable.
- AC output voltage: 0 to 150 V/0 to 300 V. Frequency: 5 Hz to 1100 Hz, DC output voltage: 0 to + 203 V/0 to + 406 V
- Component style allows expansion after being introduced. Cabinet style is compact and requires small installation space.
- Voltage dips, voltage variations, simultaneous sweeping of frequency and voltage.
- Equipped with measurement function, protective circuit, remote sensing, and AGC function. External input* available and peak current of 3.5 times of maximum rms value can be supplied.
- Software (ES0406B*) that performs low frequency immunity test of IEC/JIS standard is available.
- Peripheral components for building an EMC testing system are available.

Symbol " * " indicates optional products or products sold separately.



For your safe use

Consideration on Safety

ES series gives thorough consideration on safety to assure

- Limit value setting function allows you to set upper and lower limits on output voltage. This is effective in preventing failures of load caused by wrong operations.
- Key lock function disables the panel operations other than power ON/OFF. This is effective in preventing wrong operation during operation.
- Output terminal which surface exposes no metal is employed. (Component style)



Dealing with specification tests and various power source environment tests

Simulation Function

Our programmable AC/DC power source can perform voltage dips, voltage variations, and simultaneous sweeping of frequency and voltage to be used in various simulations such as low frequency

In addition, use of an interface (ES4473, option) realizes VCA with external analog signals and harmonic superposition.

The remote terminal (ES4474, option) allows you to perform sudden change and sweep of three-valued voltage or the repetition of this. CF (crest factor) that normally forms peak clip waveform around receiving end can also be controlled.

REMOTE TERMINAL ES4474 (option)

Operation can be performed from distance. The terminal is equipped with multi-functional setting that is even superior to the controller of the main unit, (Optional interface ES4473 is required)

Detecting/Compensating voltage fluctuation at load end Remote Sensing, AGC, and Auto Calibration

Where the consumed current of the load changes greatly depending on the operation state, voltage fluctuates at the load end. ES series eliminates this problem and improves voltage fluctuation.

Remote Sensing

The voltage at the load end is guided to the sense input terminal of this unit to be used as voltage information for AGC, auto calibration, and measurement.

Automatically controls the output voltage so that the detecting voltage is always the same, (Smooth response)

Auto Cal

Measures and corrects the output voltage so that the measured voltage agrees with the set value.



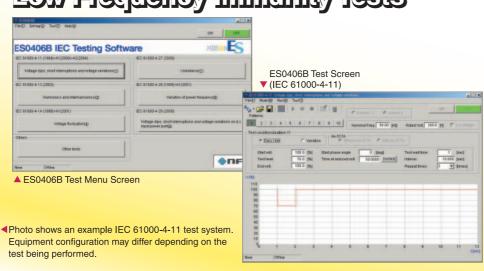
Convenience Functions & Options Given from Users' Standpoint

- Equipped with "High Stability Mode" that operates stably even to the capacitance of maximum $1000 \mu F$ for connecting a capacitor with large capacitance such as line filter for shielding room.
- Supplies peak current of up to 3.5 times of maximum output current (RMS value) to handle capacitor-input type rectifying loads (Precision
- •Line-synchronized output outputs AC synchronized with power source line frequency. This allows you to eliminate beat disturbance with commercial frequency.
- External signal input (ES4493, option) allows you to input and amplify the waveforms recorded with waveform recorder and signals of
- •Interface ES4473 (option) that is equipped with GPIB and RS-232 is available. This facilitates tests/simulations with PC.
- Memory function stores/calls 120 panel setting states such as output voltage and frequency. (Measurement function excluded)
- Power inlet unit (4481, up to 6 kVA) and outlet unit (4482, up to 6 kVA) that neatly organize wires between devices are available for component style systems.

Low Frequency EMC Testing Systems



Low Frequency Immunity Tests



When combined with application software and peripheral components, the ES series can be used for low-frequency immunity and emission testing conforming to IEC and JIS standards.

The ES series is combined with a voltage dip simulator to perform low-frequency immunity tests such as IEC 61000-4-11. The ES0406B Low-Frequency Immunity Test Program makes it easy to perform testing under the conditions stipulated in the standard.

Equipment Configuration Example (For immunity testing)

- ES Series Programmable AC/DC Power Source (select a model that matches the power requirement of the EUT.)
- ES0406B Low-Frequency Immunity Test Program
 (To use ES0406B, the ES4473 interface board option and the ES4493 external) signal input option for the ES series are required.
- PC/AT compatible personal computer
 (OS: Microsoft Windows 98SE/ME/2000/XP, equipped with GPIB interface)
- ♦ Voltage dip simulator required for IEC 61000-4-11
 Single-phase tests: One As-517A Voltage Dips Simulator
- Three-phase tests: Two As-517A Voltage Dips Simulators and one As-537 Three-Phase Voltage Dips Simulator

 ◆ Function generator required for IEC 61000-4-13

 WF1946B two-channel function generator
- (one for single-phase tests, three for three-phase tests*)

 WF1945B single-channel function generator
 (1991 simultaneous operation option and 1994 simultaneous operation cable required.)

Low Frequency Emission Tests

When combined with a reference impedance network and power analyzer (provided by the customer), the ES series programmable AC/DC power source can be used to perform IEC 61000-3-2/IEC 61000-3-12 harmonic current measurements and IEC 61000-3-3/IEC 61000-3-11 voltage fluctuation and flicker measurements.

Equipment Configuration Example

- ES series Programmable AC/DC Power Source (select a model that matches the power required of the EUT.)
- ES4152 (single-phase) or ES4153 (three-phase) Reference impedance network required for IEC 61000-3 series
- Power analyzer (provided by customer)

▼ Supported IEC Standards

IEC 61000-3-2	Harmonic current (≦16A)				
JIS C 61000-3-2 Harmonic current (≦20A)					
IEC 61000-3-12	Harmonic current (16A to 75A)				
IEC 61000-3-3	Voltage changes, Voltage fluctuations, Flicker (≤16A)				
IEC 61000-3-11	Voltage changes, Voltage fluctuations, Flicker (≦75A)				
	JIS C 61000-3-2 IEC 61000-3-12 IEC 61000-3-3				

Low Frequency Immunity Test Program ES0406B

ES0406B is a software application designed for use with the ES series. It is used for low-frequency immunity testing conforming to the IEC standard. It simplifies testing for conditions such as voltage dips, short interruptions, and voltage variations.

■ Features

- Various test items supporting the IEC standard. Controls the dip simulator and ES series, and implements a variety of immunity tests.
- Voltage setting, frequency setting, range switching, and output on/off toggling can be performed by software.
- The examination condition files that various IEC standards demand is prepared.
- Using the test result report generation function, Test results can be output by text files.

▼ Operating Environment

- p								
	Personal Computer	PC/AT compatible						
		CPU: 300 MHz or faster; Memory: 128 MB or more						
		OS: Windows 98SE/Me/2000/XP (Microsoft)						
	GPIB Interface	PCI-GPIB board, PCMCIA-GPIB card,						
	(Use one of the followings)	USB-GPIB (All by National Instruments)						

▼ Supported IEC Standards

Standard Name	Test Name
IEC 61000-4-11 (2004) *1	Voltage dips, short interruptions, voltage variations
IEC 61000-4-13 (2002)	Harmonics combination (Flat curve)
	Harmonics combination (Overswing)
	Sweep in frequency*2, Individual harmonics*2
	Interharmonics*2, Meister curve*2
IEC 61000-4-14 (2002)	Voltage fluctuation
IEC 61000-4-27 (2000) *3	Unbalance
IEC 61000-4-28 (2002)	Variation of power frequency
IEC 61000-4-29 (2000) *3	Voltage dips, short interruptions,
	voltage variations on d.c. input power port
Other tests	Abrupt voltage and/or phase change
	Phase unbalance in single-phase three-wire
	systems and three-phase systems
	Arbitrary waveforms

- *1 Preliminary tests can be conducted with ES0406B. In the case of main tests, the following products are required.
- For the single-phase tests, a voltage dips simulator (As-517A) is required.
- For the three-phase tests (phase voltage and line voltage tests), two voltage dips simulators (As-517A) and a three-phase voltage dips simulator (As-537) are required.
- *2 In the case of single-phase, a 2-channel function generator (WF1946B) is required. In the case of three-phase, three WF1946Bs, three synchronized operation options (1991) and two synchronized operation cables (1994) are required. When the Meister curve test is conducted, a 1-channel function generator (WF1945B) is also required besides the above products.
- *3 Preliminary tests can be conducted with ES0406B.

Voltage Dips Simulator As-517A/As-537

For IEC 61000-4-11 (2004)

Voltage Dips, Short Interruptions, and Voltage Variations



As-537 Three-Phase Voltage Dips Simulator

When combining the ES series with the As-517A/As-537 Voltage Dips Simulator, the ES0406B Low-Frequency Immunity Test Program can be used to test phase currents up to 16 A according to the IEC 61000-4-11 (2004) standard single-phase or three-phase. The As-517A/As-537 Voltage Dips Simulator is using high-speed semiconductor switches to achieve rapid voltage switching.

- For single-phase tests, one As-517A, the ES0406B software application, and the ES series are required.

 For three-phase tests (phase voltage and line-to-line voltage tests), two As-517A, one As-537, the ES0406B software ap-
- plication, and the ES series are required.

 * The As-517A and As-537 are designed specifically for the ES series.

Reference Impedance Network ES4152/ES4153

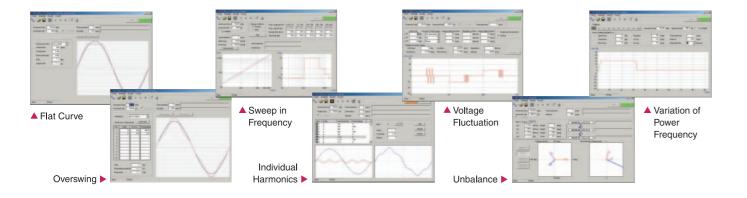
For IEC 61000-3-3/JIS C 61000-3-2 Measurement Flicker and Harmonic Current





The ES4152 and ES4153 Reference Impedance Networks use a network of resistance and inductance circuits to approximate the impedance of an actual commercial line from the output impedance of the ES series. They are used in combination with the ES series for flicker measurement and harmonic current measurement (JIS standard).

- The impedance value is guaranteed at the value given by the combination of ES series and this unit.
- **ES4152**: Single-phase two-wire system, 20 A rms, 80 A pk **ES4153**: Single-phase (two-/three-wire system)
 - Three-phase (three-/four-wire system), 20 A rms, 80 A pk per phase
- The errors caused by impedance switching relays or current detecting resistor are corrected with feedback.
- Equipped with voltage/current monitoring terminal for connecting analyzer.
- \ast The ES4152 and ES4153 are designed specifically for the ES series.



Specifications



ES2000B

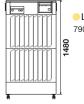
P-STATION/ES series

Nun	ber of Phases						Single F	Dhaca					Thron /Si	ingle-Phase \$	Switching				Th	ree Pha	200			
	ut Power		O LAVA	4 141/4	C IAVA	O LAVA	1		4.4 LAVA	46 1/4	40 14/4	00 141/4	_	12 kVA		10 1/10	40 14/4	04 14/4		_	1	40 1/4	E4 12/A	60 P/V
Jul	Component Style *1	ES2000S	2 kVA	4 kVA	6 kVA	8 kVA	10 kVA	12 kVA	14 kVA	16 kVA	18 KVA	20 KVA	6 KVA	IZ KVA	10 KVA	IZ KVA	18 KVA	Z4 KVA	30 KVA	36 KVA	42 KVA	48 KVA	24 KVA	60 kVA
Ë	Component Style	ES2000U		+ -		+		_	_		 	<u> </u>	1			1	1	1	1	1	1	1	1	1
atic		ES2000P		+ -	+ -	+ -	_	_	_	_	_	_	2	┤ /		2	2	2	2	2	2	2	2	2
Configuration		ES2000B	_	1	2	3	4	5	6	7	8	9	_	1//	-	3	6	9	12	15	18	21	24	27
Jfig	Cabinet Style	Model			ES6000S		ES10000S	ES12000S			ES18000S	<u> </u>	ES6000W	/ ES12000W I	ES18000W			ES24000T		ES36000T				
ē		S type Cabinet	1 _		1	1	_	_			1		1	_	1			3		_				
Ŭ		L type Cabinet			_	_	1	1			1	1/	_	1	1			_		3				
	Output Type	71	Single-phase	e two-wire system	m							V	Three-phas	se four-wire syst	tem (Y-conne	ection), (Two-	phase syste	m in sing l e ph	ase mode)					
	Output Voltage Sett-	100 V Range				-phase systems,	this applies wher	n setting phase	voltage. (rated o	output voltage:	100 V rms)			,	,	,,,	, ,	<u> </u>	,					
ing Range 200 V Range 0 V to 300 V (resolution of 0.1 V) For three-phase systems, this applies when setting phase voltage. (rated output voltage: 200 V rms)																								
	Maximum Output	Single Phase (100V/200V)	20A/10A	40A/20A	60A/30A	80A/40A	100A/50A	120A/60A	140A/70A	160A/80A	180A/90A	200A/100A	60A/30A	120A/60A	180A/90A	_								
	Current *3	Three Phase*4 (100V/200V)) —	•		•							20A/10A	40A/20A	60A/30A	40A/20A	60A/30A	80A/40A	100A/50A	120A/60A	140A/70A	160A/80A	180A/90A	200A/100
	Maximum Output Cu	ırrent (Peak) *5	Precision mo	ode: 3.5 times of	f maximum outp	out current (rms v	/alue), High stabil	ity mode: 2.7 tir	mes of maximur	m output current	(rms value)													
	Load Regulation *6	Precision Mode	Within ±0.5	%							Within ±1.0	0%	Within ±0.	5% V	Within ±1.0%	Within ±0.5%	ó	Within ±1.09	%					
_		High Stability Mode	Within ±1.0	%							Within ±1.	5%	Within ±1.	0% V	Within ±1.5%	Within ±1.09	%	Within ±1.59	%					
Output	Line Regulation		Within ±0.2	% to the chang	e in power inpu	t voltage of 170	V to 250 V (Comp	ponent sty l e) an	d 170 V to 220	V (Cabinet style)	at rated out	put voltage												
) II	Load Power Factor I	Range *7	0 to 1 (lead o	or lag)																				
Ö	Distortion Factor		0.5 % or low	er (rated output	voltage)																			
⋖	Output Frequency		Setting rang	je : 5 Hz to 110	0 Hz (resolution	n of 0.01 Hz), Se	etting accuracy:	Within $\pm 1 \times 10^{-1}$	0 ⁻⁴ ,			Stabil	lity : Within ±	5×10 ⁻⁵										
	Line Synchronization	1	· · · · · · · · · · · · · · · · · · ·		•	. , , ,	onization range: 4																	
	Output Voltage Stab	ility	±100 ppm/	°C (typ.), ±100	ppm/8h (typ.),	(rated output vol	tage, no load, mo	ore than one hou	ur after turning o	on power)														
	Output Noise Level				voltage setting	: 0 V, Frequency	band: 20 Hz to	100 kHz)																
	Output Offset Voltag		Within ±15	mV (DC)																				
	Three-Phase Phase		_										120°											
	Three-Phase Phase	40Hz to 100Hz	_										Within ±1°											
	Angle Accuracy	5Hz to 450Hz	_										Within ±2°											
		5Hz to 1000Hz											Within ±5°											
ە *	Voltage Setting Rang			V (resolution of																				
Output		200 V Range		V (resolution of		004/404	454/00.54	544/074	004/04.54	704/004	044440.54	004/454	074/40.54	544/074	014/10 54									
Ħ	<u> </u>	*10 Single Phase (100V/200V)		18A/9A	27A/13.5A		45A/22.5A	54A/27A	63A/31.5A	72A/36A	81A/40.5A	90A/45A	27AV 13.5A	54A/27A	81A/40.5A	_								
	Output Voltage Stab	ility	1.27 kVA	2.54 kVA	3.81 kVA	5.08 kVA	age, no load, mor		8.89 kVA		11 40 14/4	10.7014/4	0.04.19//	7.62 kVA	11 40 14/4									
20	Power Capacity Output Offset Voltag	^	_) mV (DC), adjus		3.00 KVA	0.33 KVA	7.62 kVA	0.09 KVA	10.16 kVA	11.43 KVA	12.70 KVA	3.01 KVA	7.02 KVA	11.43 KVA									
-	Voltage	<u>e</u>				style: 170 V to 2	20 V																	
Input	Frequency		48 Hz to 62		200 v, Cabinet	style . 170 v to 2	.20 V																	
든	Number of Phases				ase Cahinet str	yle: Three phase:	S																	
Μe	Power Consumption	(Approx.)	3.8 kVA	7.6 kVA	11.4 kVA	15.2 kVA	19.0 kVA	22.8 kVA	26.6 kVA	30.4 kVA	34.2 kVA	38.0 kVA	11.4 kVA	22.8 kVA	34.2 kVA	22.8 kVA	34.2 kVA	45.6 kVA	57.0 kVA	68.4 kVA	79.8 kVA	91.2 kVA	102.6 kVA	114.0 kV
Pow	Power Factor	(Ipprovis	_	er (0.97 typ., at r											V		<u> </u>	10101111	0.10.111					
	Measurement Volt	age *12				of ±1 %, DC ac	curacy of ±3 % ((480 V range)				peak va l u	e: resolution	of 0.1 V, AC/DC	C accuracy of	f ± 3 % (480	V range)							
"		rent *12					ange), AC accurac		accuracy of ±	:3 %				of 0.01 A (80 A r				ccuracy of ± 3	%					
ö	Effe	ctive Power *12	Resolution of	f 0.1 W (2 kW ra	ange) / 1 W (20	kW range) / 10 W	/ (200 kW range),	, accuracy of ±	(1.5 % rdg + 0.5	2 % FS)		Power fac	ctor during AC	Coperation: 1 (A	Apparent pov	ver is displaye	ed in VA as p	oower in DC ou	utput mode)					
cti	Rea	ctive Power, Power Factor	Displays afte	er calculating from	m measuremen	t result of voltage	e, current, and eff	ective power.																
Functions	Simulation Function		Abrupt volta	ge change and f	frequency and/o	or voltage sweep	functions																	
	External Signal Inpu	t (Option) *13			/ /	, , ,	je: 5 Hz to 1 kHz,			•				·										
	Other Functions		Protective ful	nction, AGC*14*	¹⁵ , Remote sen	sing*14*15, Auto	Cal*15, Memory f	unction, Limit va	alue setting, and	d Key lock														
ght	Withstanding Voltag						its vs. outputs, ar			· ·														
Weight	Insulation Resistanc (DC 500 V)	Component	10 MΩ or hi	gher (value divid	led by the numb	er of units when	multiple units are	used) Chassis	and all power in	puts vs. outputs,	1	s and all outp	uts vs. powe	T				10.		Tr.	1	1		1
and V	(DC 300 V)	Cabinet	_	_	3.3 MΩ min.	. 2.5 MΩ min.	2.0 MΩ min.	1.6 MΩ min.	_	_	S: 3.3MΩ min. L: 1.6MΩ min.		3.3 MΩ min	ı. 1.6 ΜΩ min.	S: 3.3MΩ min. _: 1.6MΩ min.	-	_	5: 2.5MΩ min. (each)	_	L: 1.6MΩ min. (each)	_	_	_	_
	Performance Tempe		+5 to +35°C,	, 5 to 80% RH w	vith abso l ute hu	midity of 1 to 25	g/m³ and no cond	densation																
Environment	ture/Humidity Range	Operation Guarantee	0 to + 40°C,	5 to 80% RH wi	ith abso l ute hur	nidity of 1 to 25g	m³ and no cond	ensation																
õ		Storing Conditions	-10 to +50°C	c, 5 to 95% RH v	with absolute hu	umidity of 1 to 29	g/m³ and no con	idensation																
Ν	Weight (Approx.)	Component	48 kg	96 kg	144 kg	192 kg	240 kg	288 kg	336 kg	384 kg	432 kg	480 kg	144 kg		-	288 kg	432 kg	576 kg	720 kg	864 kg	1008 kg	1152 kg	1296 kg	1440 kg
Ш		Cabinet	_		200 kg	250 kg	320 kg	370 kg	_	_	570 kg	_	200 kg	370 kg	570 kg	-	_	750 kg	_	1110 kg	_	_	_	_
	The unit of voltage and curing Separate system cable or higher in component			*7 The power fac *8 The phase se	ctor range of the le	oad that can supply se (delay of 120 dec	maximum output co grees) and L3 phase	urrent narrows dow (delay of 240 deg				External Dir Excluding protru		Ocompoi	nent Style 49(H)×680(D)		570	S-Type Ca		Ti	790	L-Type	Cabinet 80(H)×900(D	, mm
	output frequency. Current per phase. Hat to 70 Hz. The rational that runs through the call Output voltage change.	t lowers depending on output voo o of rms value to the peak value pacitor-input type rectifier load. for the load change of 0 to 100 s	e of the current	*10 Maximum out *11 Measurement Peak value de *12 Accuracy is g *13 Operates only	tput current lowers t range switches a etects negative wa jiven for full scale (y in AC Output Mo	s depending on the utomatically. aveform for both of FS). Full scale indicate	oility mode operation output voltage. voltage and current, ates the range value uddenly. The range s	and positive wave		utput termina l.				220(W)×62	+∂(∏ <i>)</i> ^ 08U(D)			970(W) × 148	oo(⊓ <i>)</i> ∧ 900(D)			084 1 → 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +	ων(Π <i>)</i>	. 111111
	output vortage. 45 Hz to	100 HZ.	output voltage. 45 Hz to 100 Hz. *15 Effective only in AC output mode.											<u>, d</u> ±			<u>n</u>	ı						

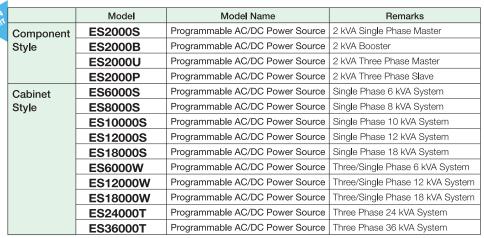
- $^{\star 15}$ Effective only in AC output mode.

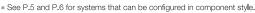






Ordering Information





N	lodel	Model Name	Remarks
ES	0406B	Low Frequency Immunity Test Program	Requires ES4473 and PC with GPIB Interface
ES	4439	Distribution Unit	For three-phase 6 kVA systems in component style
ES	4473	Interface Board	Equipped with GPIB and RS-232. VCA inputs and addition inputs available
ES	4474	Remote Terminal	Requires ES4473 Interface Board
ES	4493S	External Signal Input (ES2000S)	Option to be mentioned when placing an order.
ES	4493U	External Signal Input (ES2000U)	Option to be mentioned when placing an order.
ES	4493P	External Signal Input (ES2000P)	Option to be mentioned when placing an order.
448	81	Power Inlet Unit	Distributes single phase 200 V among maximum of 3 component-style systems.
448	82	Outlet Unit	Connects maximum of 3 component-style units (6 kVA)

Model	Model Name	Remarks
ES4152	Reference Impedance Network	Single-phase, 20 Arms. Requires ES4473
ES4153	Reference Impedance Network	Three-/Single-phase, 20 Arms (for each phase). Requires ES4473
As-517A	Voltage Dips Simulator	Requires ES0406B and ES4473
As-537	Three Phase Voltage Dips Simulator	Requires 2 As-517, ES0406B, and ES4473

Note ES series products cannot be used in combination with conventional models of 4400/8400 series products.







Related Products

Desktop size, multifunction and low price

PROGRAMMABLE AC/DC POWER SOURCE

- Ocmpact (263mm wide) and light (approx. 9.5 kg)
- Output capacity: 750 VA (for AC 100 V input) 1 kVA (for AC 200 V input)
- AC output and AC + DC output
- Equipped with oscillator and external signal input
- Measurement function, sequence function and logging function etc.



- The description given in this catalogue is based on the information as of February 20, 2009.
- Some appearance and specifications may change without notice.
- Please check the latest specifications and price before purchasing.
- Due to printing issue, the color of the product shown in the photo may differ from actual color of the product.
 The company names and product names given in the catalogue are the trademarks or registered trademarks of the companies.

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