

PROGRAMMABLE AC POWER SOURCE

DP series Type K

Single-phase model

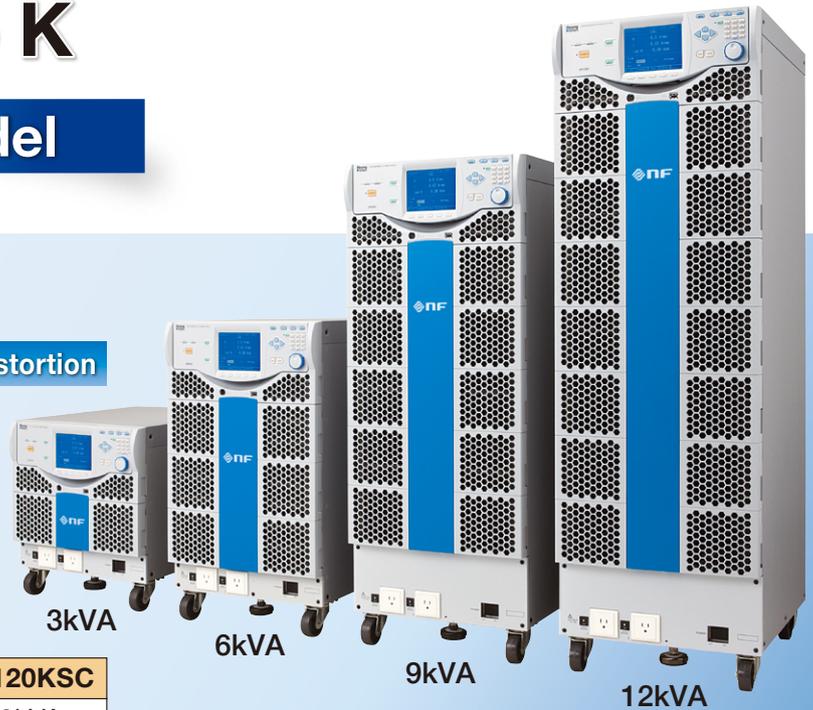
Hybrid Power Control

High Robustness Low Noise Low Distortion

DP series supports a variety of tests regardless of the loads.

Line-up

DP030KSC	DP045KSC	DP060KSC	
3kVA	4.5kVA	6kVA	
DP075KSC	DP090KSC	DP105KSC	DP120KSC
7.5kVA	9kVA	10.5kVA	12kVA

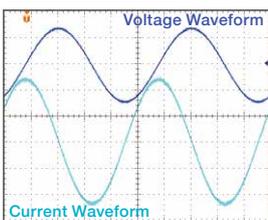


Highly robust, low distortion

Provides highly robust operation. Stable driving for both capacitive and inductive loads. Low distortion output, too.

- Output waveform when driving a 1000 μ F capacitor load

Measured data

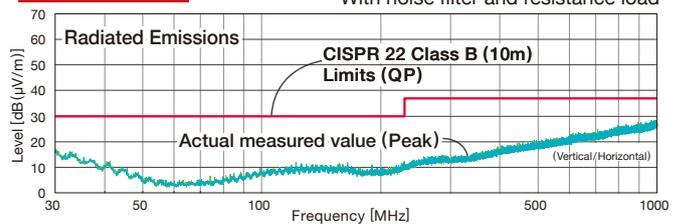


No resonance or distortion, even with a high-capacitance noise filter connected

Low noise

Low noise for both conduction and radiation. Suitable for use in CVCF for anechoic chambers or EMC testing.

Measured data



Load protection

Variable limiter for the peak current and effective current. Using the limiter for loads that have a large inrush current eliminates the need to introduce a high-capacity power supply.

As DC power supply

Outputs ± 454 V, fast response with sequence function

Various Functions

- Measurement Functions
Voltage, Current, Power, Harmonic current, Power factor, Crest factor, and so on.
- Remote Sensing, AGC, Autocal
- Sequence Function
- AC Line Simulation
- Clipped Sine Wave, Arbitrary Waveform
- External signal input (SYNC, VCA, EXT, ADD)
- Interface
RS-232, USB and GPIB or LAN (LXI) (Specify when ordering)
- Control Software

Specifications

- The following settings and conditions are provided unless otherwise noted.
 - Load: resistance load for power factor 1
 - AGC/Auto Cal: OFF
 - Warm up: 30min. at least
 - Signal source: INT (internal signal source)
 - Current limiter: factory default setting
 - Output voltage waveform: sine wave
 - Output terminal: rear panel output terminal block

- [set] indicates a setting value.
- 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.

1P : Single-phase 2-wire
 3P3W : Three-phase 3-wire
 3P4W : Three-phase 4-wire

AC/DC Mode, Signal Source

AC/DC mode	AC, ACDC, DC
Signal source	INT, VCA, SYNC, EXT, ADD

Power Output

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC
Output power *2	3 kVA	4.5 kVA	6 kVA	7.5 kVA	9 kVA	10.5 kVA	12 kVA
Mode	Single-phase 2-wire Floating output, it can be used with grounding of Lo terminal.						
Rated output voltage	100 V/200 V						
Voltage setting range	0.0 V to 160.0 V/0.0 V to 320.0 V, 0.0 Vp-p to 454.0 Vp-p/0.0 Vp-p to 908.0 Vp-p (Arbitrary waveform)						
Resolution	0.1 V						
Voltage accuracy *3	± (0.5% of set + 0.6 V/1.2 V)						
Max. current *4	30 A/15 A	45 A/22.5 A	60 A/30 A	75 A/37.5 A	90 A/45 A	105 A/52.5 A	120 A/60 A
Max. peak current *5	4 times value of maximum current.						
Load power factor range	0 to 1 (lead or lag, at 45 Hz to 65 Hz, external power injection and regeneration are not available.)						
Frequency setting range	40.00 Hz to 550.00 Hz (AC mode), 1.00 Hz to 550.00 Hz (ACDC mode)						
Resolution	0.01 Hz						
Accuracy	±0.01% of setting (23°C ±5°C)						
Frequency stability *6	±0.005%						
Voltage frequency accuracy *7	±1%						
Output waveform	Sine, arbitrary (16 types), clipped sine (3 types)						
Output on phase	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg.)						
Output off phase	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg. selectable between active or inactive)						
DC offset *8	Within ±20 mV (typ., fine adjustment available)						
Output power *2	3 kW	4.5 kW	6 kW	7.5 kW	9 kW	10.5 kW	12 kW
Mode	Floating output, it can be used with grounding of Lo terminal.						
Rated output voltage	100 V/200 V						
Voltage setting range	-227.0 V to +227.0 V/-454.0 V to +454.0 V						
Resolution	0.1 V						
Voltage accuracy *10	± (0.5% of set + 0.6 V/1.2 V)						
Max. current *11	30 A/15 A	45 A/22.5 A	60 A/30 A	75 A/37.5 A	90 A/45 A	105 A/52.5 A	120 A/60 A
Max. instantaneous current *12	4 times value of maximum current.						

Output Voltage Stability, Distortion Factor

Output voltage stability	Fluctuation with input voltage *13 : within ±0.15% Fluctuation with output current *14 : within ±0.15 V/±0.30 V (DC), within ±0.15 V/±0.30 V (45 Hz to 65 Hz), within ±0.5 V/±1.0 V (40 Hz to 550 Hz) Fluctuation with ambient temperature *15 : within ±0.01%/°C (typ.)
Output voltage distortion factor	0.5% or lower (40 Hz to 550 Hz, 50% or higher of rated output voltage, maximum output current or lower, AC and ACDC modes, THD+N)

Power Input

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC
Voltage	Overvoltage category II						
Single-phase *16	100 V to 230 V ±10% (250 V or lower)						
Three-phase 3-wire	200 V to 220 V ±15% (250 V or lower)						
Three-phase 4-wire	380 V (phase voltage: 220 V) ±15% (433 V (phase voltage: 250 V) or lower)						
Frequency	50 Hz ±2 Hz or 60 Hz ±2 Hz						
Power factor *17	0.95 or higher (typ., power input single-phase 100 V), 0.90 or higher (typ., power input single-phase 200V, three-phase three-wire 200V, or three-phase four-wire 380V)						
Frequency *17	77% or higher (typ., power input single-phase 200V, three-phase three-wire 200V, or three-phase four-wire 380V)						
Power consumption (Maximum)	4.5 kVA	6.75 kVA	9 kVA	11.25 kVA	13.5 kVA	15.75 kVA	18 kVA

- *1 : [V]=Vrms, [A]=Arms, unless otherwise specified.
- *2 : In the case that the power input voltage is 1P 170 V or lower, models with 6 kVA or higher have the limit on the power capacity
- *3 : In the case of 10 V to 150 V/20 V to 300 V, sine wave, no load, 45 Hz to 65 Hz, DC voltage setting 0 V, 23°C ±5°C.
- *4 : If the output voltage is higher than the rated value, this is limited (lowered) to satisfy the power capacity. If there is the DC superimposition, the RMS current of AC+DC satisfies the maximum current. In the case of 40 Hz or lower or 400 Hz or higher, and the ambient temperature is 40°C or higher, the maximum current may decrease.
- *5 : For the capacitor input type rectified load (crest factor=4), the rated output voltage, and 45 Hz to 65 Hz.
- *6 : For 45 Hz to 65 Hz, the rated output voltage, no load and the resistance load for the maximum current, and the operating temperature.
- *7 : For 40 Hz to 550 Hz, sine wave, the rated output voltage, the resistance load for the maximum current at 55 Hz, and 55 Hz reference.
- *8 : In the case of AC mode and 23°C ±5°C
- *9 : [V]=Vdc, [A]=Adc, and the polarity is relative to Lo terminal, unless otherwise specified.
- *10 : In the case of -212 V to -10 V, +10 V to +212 V/-424 V to -20 V, +20 V to +424 V, no load, AC setting 0 V, 23°C ±5°C.
- *11 : If the output voltage is higher than the rated value, this is limited (lowered) to satisfy the power capacity. If there is the AC superimposition, the RMS current of DC+AC satisfies the maximum current. In the case that the ambient temperature is 40°C or higher, the maximum current may decrease.
- *12 : Instantaneous=within 2 ms, at the rated output voltage.
- *13 : In the case of 1P input, for power input 90 V to 250 V for 3 kVA, and 4.5 kVA models, power input 170 V to 250 V for the 6 kVA or higher models, power input 200 V reference. In the case of 3P3W input, for power input 170 V to 250 V, power input 200 V reference. In the case of 3P4W input, for power input is 323 V to 433 V, power input 380 V reference. For the resistance load at the maximum current, the rated output voltage, DC or 45 Hz to 65 Hz. Transition state immediately after a change of the input power-supply voltage is not included.
- *14 : In the case that the output current is changed from 0% to 100% of maximum output current. For output voltage 75 V to 150 V/150 V to 300 V, no load reference. However, if the output voltage is higher than the rated value, the maximum current is limited to satisfy the power capacity.
- *15 : For power input 200 V or 380 V, no load, the rated output voltage, DC or 45 Hz to 65 Hz.
- *16 : In the 6 kVA or higher models, the output capacity is limited to 4.5 kW for the single-phase 170 V or lower input.
- *17 : In the case of AC-INT, the rated output voltage, the resistance load at the maximum current, 45 Hz to 65 Hz output.

Measurement Function

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC	
Display	Normal mode	Displays almost all measured and setting values (except harmonic current value)						
	Simple mode	Displays three measurement values (except harmonic current value) enlarged.						
Voltage	RMS value	Full scale	250.0 V/500.0 V					
		Resolution	0.1 V					
	DC average (avg)	Full scale	±250.0 V/±500.0 V					
	Resolution	0.1 V						
Peak value (pk) max./min.	Full scale	±250.0 V/±500.0 V						
	Resolution	0.1 V						
RMS value	Full scale	40 A/20 A	60 A/30 A	80 A/40 A	100 A/50 A	120 A/60 A	140 A/70 A	160 A/80 A
	Resolution	0.01 A						
DC average (avg)	Full scale	40 A/20 A	60 A/30 A	80 A/40 A	100 A/50 A	120 A/60 A	140 A/70 A	160 A/80 A
	Resolution	0.01 A						
Peak value (pk) max./min.	Full scale	±160 A/±80 A	±240 A/±120 A	±320 A/±160 A	±400 A/±200 A	±480 A/±240 A	±560 A/±280 A	±640 A/±320 A
	Resolution	0.01 A						
Hold	Hold the maximum values of max and min with the polarity (with the clear function)							
Active (W)	Full scale	3600 W	5400 W	7200 W	9000 W	10800 W	12600 W	14400 W
	Resolution	0.1 W/1 W (1000 W or higher)						
Apparent (VA) *19	Full scale	4500 VA	6750 VA	9000 VA	11250 VA	13500 VA	15750 VA	18000 VA
	Resolution	0.1 VA/1 VA (1000 VA or higher)						
Reactive (var) *19	Full scale	4500 var	6750 var	9000 var	11250 var	13500 var	15750 var	18000 var
	Resolution	0.1 var/1 var (1000 var or higher)						
Load power factor *19	Range	0.00 to 1.00						
	Resolution	0.01						
Load crest factor	Range	0.00 to 50.00						
	Resolution	0.01						
Synchronization frequency (only SYNC)	Range	38.0 Hz to 525.0 Hz						
	Resolution	0.1 Hz						
Harmonic current *20	Range	Up to 40th order						
	Full scale	40 A/20 A, 100%	60 A/30 A, 100%	80 A/40 A, 100%	100 A/50 A, 100%	120 A/60 A, 100%	140 A/70 A, 100%	160 A/80 A, 100%
	Resolution	0.01 A, 0.1%						
CO ₂ emissions	Contents	Instantaneous (kgCO ₂ /h), integration (tCO ₂ , can be cleared) values for the internal loss and the output power. CO ₂ emissions coefficient (tCO ₂ /kWh): variable (resolution: 0.000001)						

- *18 : In the case of sine wave, 50 V or higher output voltage, and that output current is 10% or higher of maximum current.
- *19 : Excluding DC mode
- *20 : AC-INT mode, fundamental wave 50 Hz/60 Hz only, phase current. This measurement does not conform to IEC or other standards.

Power Unit Energization Setting

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC
Output power per each unit	1.5 kVA or 1.5 kW						
Number of unit	2	3	4	5	6	7	8

Current Limiter

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC		
Peak current limiter	Positive current	Setting range (peak value)	+15.0 A ~ +126.0 A / +7.5 A ~ +63.0 A	+22.5 A ~ +189.0 A / +11.2 A ~ +94.5 A	+30.0 A ~ +252.0 A / +15.0 A ~ +126.0 A	+37.5 A ~ +315.0 A / +18.7 A ~ +157.5 A	+45.0 A ~ +378.0 A / +22.5 A ~ +189.0 A	+52.5 A ~ +441.0 A / +26.2 A ~ +220.5 A	+60.0 A ~ +504.0 A / +30.0 A ~ +252.0 A
	Negative current	Setting range (peak value)	-126.0 A ~ -15.0 A / -63.0 A ~ -7.5 A	-189.0 A ~ -22.5 A / -94.5 A ~ -11.2 A	-252.0 A ~ -30.0 A / -126.0 A ~ -15.0 A	-315.0 A ~ -37.5 A / -157.5 A ~ -18.7 A	-378.0 A ~ -45.0 A / -189.0 A ~ -22.5 A	-441.0 A ~ -52.5 A / -220.5 A ~ -26.2 A	-504.0 A ~ -60.0 A / -252.0 A ~ -30.0 A
	Resolution	0.1 A							
RMS current limiter	Limiter operation								
	Automatic recovery (continuous) or output turn-off when the limited state continues over the specified time (1 s to 10 s, resolution 1 s)								
	Setting range (RMS)	1.5 A ~ 31.5 A / 1.5 A ~ 15.8 A	2.3 A ~ 47.3 A / 2.3 A ~ 23.7 A	3.0 A ~ 63.0 A / 3.0 A ~ 31.5 A	3.8 A ~ 78.8 A / 3.8 A ~ 39.4 A	4.5 A ~ 94.5 A / 4.5 A ~ 47.3 A	5.3 A ~ 110.3 A / 5.3 A ~ 55.2 A	6.0 A ~ 126.0 A / 6.0 A ~ 63.0 A	
Resolution	0.1 A								
Limiter operation							Automatic recovery (continuous) or output turn-off when the limited state continues over the specified time (1 s to 10 s, resolution 1 s)		

Note: If you increased or decreased the number of units by the power unit energization setting, the factory default setting corresponding to the capacity is used.

Specifications

■ Sequence Function

Number of memories	5 (nonvolatile)
Number of steps	255 max. (for each sequence)
Setting range of step time	0.0010 s to 999.9999 s
Operation within step	Constant, keep, linear sweep
Parameters	Output range, AC/DC mode, AC voltage, frequency, waveform, DC voltage, start phase, stop phase, step termination, jump count (1 to 9999, or infinite), specification of the jump-to step, synchronous step output (2 bit), specification of the branch step, trigger output
Sequence control	Start, stop, hold, resume, branch 1, branch 2
Others	1) Sequence function works with AC-INT, ACDC-INT and DC-INT. 2) AC voltage, frequency, waveform, start phase and stop phase cannot be set with DC-INT.

■ Simulation

Number of memories	5 (nonvolatile)
Number of steps	6 (initial, normal 1, transition 1, abnormal, transition 2, normal 2)
Setting range of step time	0.0010 s to 999.9999 s (0 s can be set for transition steps only)
Parameters	Output range, AC voltage, frequency, waveform (sine wave only), start phase (excluding transition steps), stop phase (excluding transition steps), synchronous step (2 bit), trigger output, repeat count (1-9999 times or infinite).
Simulation control	Start, stop
Others	In simulation function, only AC and sine wave, fixed for ACDC-INT.

■ Control Software

Functions	Remote control	Parameter setting, saving, loading, and others.
	Status monitor	Monitors and displays status of connected equipment.
	Logging	Reads and saves measured values.
	Arbitrary waveform	Waveform creation and edit, transfer, display and file operations
Sequence simulation	Sequence data creation, edit, save, transfer, preview, execution control, monitor/display during execution, and others.	
Environment	CPU	300 MHz min. (1.6 GHz min. recommended)
	Memory	128 MB or more (512 MB min. recommended)
	Free hard disk space	64 MB or more
	Display	1024 x 768 pixels or more, and 256 colors or more
	OS	Windows 7/8.1/10 (32 bit/64-bit) (Microsoft)
	Disk drive	CD-ROM drive

■ Other Function

Setting limitation	Voltage	RMS, peak (+/-)
	Frequency	Upper limit or lower limit
Remote sensing		Voltage detection point is output terminal or sensing input terminal. (switchable)
AGC		Function for continuously performing automatic correction so that the RMS value of the detection point is equal to the voltage setting value. Response time less than 100 ms (typ.) (At DC/50 Hz/60 Hz, rated output voltage)
Autocal (Automatic calibration)		When the Autocal is on, the detection point is always measured, and the output voltage is continuously corrected so that its RMS value is equal to the output setting value.
Clipped sine wave	Number of memories	3 (nonvolatile)
	CF	Variable range: 1.10 to 1.41; setting resolution: 0.01; RMS value correction: yes
	Clipping rate	Variable range 40.0% to 100.0%; setting resolution: 0.1%; RMS value correction: no
Arbitrary wave	Number of memories	16 (nonvolatile)
	Waveform length	4096 words
	Amplitude resolution	16 bit
External signal input	External sync signal input (SYNC only)	Sync signal source switching: external sync signal (EXT) or power input (LINE)
	Voltage setting signal input (VCA only)	Gain setting range: 0.0 to 227.0 times/0.0 to 454.0 times Resolution: 0.1
	External signal input (EXT/ADD)	Gain setting range: 0.0 to 227.0 times/0.0 to 454.0 times, resolution: 0.1 Input frequency range: DC to 550 Hz (sine wave), DC to 100 Hz (not sine wave).
Memory function		Store and recall settings from nonvolatile memory
Number of memories		Basic settings: 30; sequences: 5; simulations: 5; clipped sine waves: 3; arbitrary waves: 16
Protections		Protective operation for abnormal output (output overvoltage, output over current, etc.), power unit error, and internal control error (internal communication error, etc.)
External control I/O		Enables control of the system using external signals (or no-voltage contacts) and state output.
Interface (GPIB/LAN select on order)		USB interface [USB1.1, USBTMC], RS-232 interface (not capable of binary transfer), GPIB interface (IEEE 488.1 std 1987) (not capable of binary transfer or serial polling), LAN interface (LXI 1.4)
USB memory		Usable memory: conforms to USB 1.1 or USB 2.0, Readable/writable content: basic setting memory, sequence, AC line simulation, arbitrary wave.
Output relay control		Selects either ON/OFF using output relay, or high-impedance without using output relay.
Output waveform monitor		Monitors waveform of output voltage or output current. (switchable)
LCD display		5.7 inch, contrast 0 to 99, blue or white base color.
Others		Beep, key lock, output setting at power-on, trigger output setting, time unit setting (for sequence and simulation), reset function.

■ General Information

Model name	DP030KSC	DP045KSC	DP060KSC	DP075KSC	DP090KSC	DP105KSC	DP120KSC
Withstanding voltage	AC 1500 V or DC 2130 V 1 minute (inputs vs. outputs/chassis, inputs/chassis vs. outputs)						
Insulation resistance	30 MΩ or higher (DC 500 V), (inputs vs. outputs/chassis, inputs/chassis vs. outputs)						
Operating temperature	0°C to + 50°C						
Operating humidity	5% to 85% RH, (Absolute humidity 1 to 25 g/m ³ , no condensation)						
Dimensions (W×H×D) mm (no protrusions)	430×398×562	430×665×562		430×1021×562		430×1287×562	
Weight (approx.)	50 kg	70 kg	82 kg	110 kg	125 kg	140 kg	155 kg
Power input terminal (rear)	1P	M6 screw			M8 upset bolt		
	3P3W/3P4W						
Output terminal (rear)	M6 screw			M8 upset bolt			
Accessories	Instruction manual, CD-ROM (control software, LabVIEW driver, instruction manual for remote control and control software), stabilizer (DP075KSC, DP090KSC, DP105KSC, DP120KSC only)						

Note: The contents of this catalog are current as of March 5th, 2020
 ●Products appearance and specifications are subject to change without notice.
 ●Before purchase contact us to confirm the latest specifications, price and delivery date.

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