Specifications PROGRAMMABLE AC/DC POWER SOURCE KP3000S/KP3000GS

The following settings and conditions are provided unless otherwise noted.
- Load: resistance load for power factor 1
- Signal source: INT (internal signal source)
- Output voltage waveform: sine wave
- AGC/Auto Cal: OFF
- Current limiter: factory default setting
- 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.

AC/DC Mode, Signal Source

	Single-phase	Polyphase System (KP3000S only)
AC/DC mode	AC, AC+DC, DC	AC, AC+DC
Signal source	INT, VCA, SYNC, EXT, ADD	INT, VCA, SYNC

Power Output

AC output *1	Output power		3 kVA
	Output mode		Single-phase, two-wire Floating output, it can be used with grounding of Lo terminal.
	Rated output voltage		100 V/200 V
	Output range		100 V range/200 V range
	Rated output voltage		0.0 V to 155.0 V/0.0 V to 310.0 V, 0.0 Vp-p to 440.0 Vp-p/0.0 Vp-p to 880.0 Vp-p (Arbitrary waveform)
		Resolution	0.1 V
	Voltage setting accuracy *2		±(0.5% of set + 0.6 V/1.2 V)
	Max. current *3		30 A/15 A
	Max. peak current *4		4 times value of maximum current (Apk)
	Load power factor		0 to 1 (lead or lag, at 45 Hz to 65 Hz, external power injection and regeneration are not available.)
	Frequency setting range		AC mode: 40 Hz to 550 Hz, AC+DC mode: 1 Hz to 550 Hz
		Resolution	0.01 Hz
		Accuracy	±0.01% of set (23˚C±5˚C)
	Frequency stability *5		±0.005%
	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 *6		Within ±20 mV (typ., fine adjustment available)
DC output *7	Output power		3 kW
	Output mode		Floating output, it can be used with grounding of Lo terminal.
	Rated output voltage		100 V/200 V
	Voltage setting range		−220 V to +220 V/−440 V to +440 V
		Resolution	0.1 V
		Accuracy *8	± (|0.5% of set| +0.6 V/1.2 V)
	Max. current *9		30 A/15 A
	Max. instantaneous current *10		4 times value of maximum current (Apk)
Output voltage stability			Fluctuation with input voltage *11: within ±0.15% Fluctuation with output current *12: 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 *13: within ±0.01%/˚C
Output voltage distortion factor			0.5% or lower (40 Hz to 550 Hz, 50% or more of rated output voltage, maximum output current or below, AC and AC+DC modes

*1: [V] = Vrms, [A] = Arms, and power supply input voltage is 200 V, unless otherwise specified.
*2: 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
*3: 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.
*4: For the capacitor input type rectified load (crest factor=4), the rated output voltage, and 45 Hz to 65 Hz.
*5: For 45 Hz to 65 Hz, the rated output voltage, no load and the resistance load for the maximum current, and the operating temperature.
*6: In the case of AC mode and 23˚C ±5˚C
*7: [V]=Vdc,[A]=Adc, the power input voltage is 200 V, and the polarity is relative to Lo terminal, unless otherwise specified.
*8: 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.
*9: 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.
*10: Instantaneous = within 2 ms, at the rated output voltage
*11: For power input 90 V to 250 V, power input 200 V reference, the resistance load at maximum current, the rated output
*12: 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.
*13: For power input 200 V, no load, the rated output voltage, DC or 45 Hz to 65 Hz.

Power Input

Voltage	100 V to 230 V±10% (max. voltage 250 V)
Frequency, phase	50 Hz ±2 Hz or 60 Hz ±2 Hz, single phase
Power factor *14	0.95 or more (typ., at AC100 V input) , 0.90 or more (typ., at AC200 V input)
Efficiency *14	77% or more (typ., at AC200 V input)
Max. power consumption	4.5 kVA

*14: 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

Display	Normal	Displays almost all measured and setting values (except harmonic current value)
	Simple	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) (only single phase)	Full scale: ±250.0 V/±500.0 V Resolution: 0.1 V
	Peak value (pk) max/min Individual	Full scale: ±250.0 V/±500.0 V Resolution: 0.1 V
Current *15	RMS value	Full scale: 40 A/20 A, resolution: 0.01 A
	DC average (avg) (only single phase)	Full scale: ±40 A/±20 A Resolution: 0.01 A
	Peak value (pk) max/min Individual display	Full scale: ±160 A/±80 A, resolution: 0.01 A Hold the maximum values of | max | and | min | with the polarity (with the clear function)
Power *16	Active (W) *17	Full scale: 3600 W Resolution: 0.1 W/1 W(1000 W or higher)
	Apparent (VA) *18	Full scale: 4500 VA Resolution: 0.1 VA/1 VA(1000 VA or higher)
	Reactive (var) *18 *19	Full scale: 4500 var Resolution: 0.1 var/ 1 var(1000 var or higher)
Load power factor *18		Measurement range: 0.00 to 1.00, resolution: 0.01
Load crest factor		Measurement range: 0.00 to 50.00, resolution: 0.01
Synchronization frequency (only sync mode)		Display range: 38.0 Hz to 525.0 Hz Resolution: 0.1 Hz
Harmonic current *20 rms/% display		Measurement range: Up to 40th order. Full scale: 40 A/20 A, 100% Resolution: 0.01 A, 0.1%
CO_2 emissions display		Instantaneous, integration value for internal loss or output power. CO_2 emissions coefficient: variable

*15: In the case that output current is 5% to 100% of maximum current.
*16: In the case of sine wave, 50 V or higher output voltage, and that output current is 10% or higher of maximum current.
*17: For the load with power factor 1
*18: Excluding DC mode
*19: For the load with power factor 0.5 or lower
*20: AC-INT mode, fundamental wave 50 Hz/60 Hz only

Current Limiter

Peak current limiter *21	Positive current	+15.0 Apk to +126.0 Apk/+7.5 Apk to +63.0 Apk
	Negative current	−126.0 Apk to −15.0A pk/−63.0 Apk to −7.5 Apk
	Resolution	0.1 Apk
	Limiter operation	Automatic recovery or output turn-off when the limited state continues over the specified time
RMS current limiter *21	Setting range (RMS)	1.5 A to 31.5 A/1.5 A to 15.8 A
	Resolution	0.1 A
	Limiter operation	Automatic recovery or output turn-off when the limited state continues over the specified time

*21: When you set the number of units by the power unit energization setting to 1, the setting range becomes half.

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 phase voltage, frequency, waveform, DC voltage, start phase, stop phase, phase angle, 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

- Sequence function works with AC-INT, AC+DC-INT and DC-INT.
- 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).
Step time setting range	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.

- In simulation function, only AC and sine wave, fixed for AC+DC-INT.

Control Software (Option)

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 and simulation	Sequence data creation, edit, save, transfer, preview, execution control, monitor/display during execution, and others.
Operating 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	Can display 1024 × 768 pixels or more, and 256 colors or more
	OS	Windows 7/8.1/10 (32-bit / 64-bit)
	Disk drive	CD-ROM drive
	Interface	USB 1.1 full-speed

Other Functions

Setting range limit function	Voltage	AC mode: voltage (RMS), AC+DC mode: positive voltage, negative voltage (peak value)
	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 Clip ratio 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: 16bit
External signal input	External sync input (Sync mode)	Sync signal source switching: external sync signal (EXT) or power input (LINE) Sync frequency range: 40Hz to 500Hz
	VCA input (VCA mode)	Gain setting range: 0.0 to 220.0 times/0.0 to 440.0 times, resolution: 0.1, Input voltage range: ±2.2 V
	External signal input (EXT/ADD mode)	Gain setting range: 0.0 to 220.0 times/0.0 to 440.0 times, resolution: 0.1 Input voltage range: ±2.2 V Input frequency range: DC to 550 Hz (sine wave), DC to 100 Hz (other than sine wave)
Memory function		Store and recall settings from nonvolatile memory Number of Memories: basic settings: 30
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) Control input, state output
Interface * GPIB/LAN specified when you order (LAN is not CE certified)		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)
USB memory		Usable memory: conforms to USB 1.1 or USB 2.0, Connector: USB-A (front panel) Readable/writable content: basic setting memory, sequence, AC line simulation, arbitrary wave.
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		Power unit energization setting, beep, key lock, output setting at power-on, trigger output setting, time unit setting, reset function.

Generals

Withstanding voltage	AC 1500 V or DC 2130 V (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/Humidity	0˚C to + 50˚C, 5% to 85% RH (absolute humidity 1 to 25 g/m³, no condensation)
Dimensions (W×H×D) mm	430×398×562
Weight (approx.)	50 kg
RoHS	Directive 2011/65/EU
EMC	EN 61326-1: 2013 (Group1, classA)
Safety	EN 61010-1: 2010
Accessories	Instruction manual, power cable (KP3000S: 100 V / 200 V AC input (select on order), KP3000GS: 200 V AC input)

Configuration of Polyphase System

By connecting multiple KP3000Ss, a polyphase system can be configured. (KP3000S only)

2 cabinets	Single-phase thee-wire 6 kVA	Using a system cable for 1P3W (PA-001-1720)
3 cabinets	Thee-phase 9 kVA	Using a system cable for 3P4W (PA-001-1721)

Note: The contents of this catalog are current as of October 1, 2019
- Products appearance and specificaitons are subject to change without notice.
- Before purchase contact us to confirm the latest specifications, price and delivery date.

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