

Specifications

Single-phase models / polyphase models (1.5 kVA to 36 kVA)

Models/systems

Each item applies to all models unless indicated otherwise.

Single-phase models	DP015S, DP030S, DP045S, DP060S, DP075S, DP090S, DP105S, DP120S, DP240S, DP360S
Single-phase three-wire models	DP030D, DP060D, DP090D, DP120D
Three-phase models	DP045T, DP090T
Polyphase systems	Configuration of a single-phase three-wire system with two units of the same single-phase model, or configuration of a three-phase system with three units (connected with system cable). Note: In a polyphase system, the specifications of the constituent single-phase models are the specifications for each phase. The system must be configured by same model and same firmware. Please inquire for details about specifications.

The following settings and conditions are provided unless otherwise noted.

- Load: resistance load for power factor 1
 - AGC/Auto Cal: OFF
 - 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
1P3W : Single-phase 3-wire
3P3W : Three-phase 3-wire
3P4W : Three-phase 4-wire

AC/DC Mode, Signal Source

	Single-phase models	Single-phase 3-wire models, Three-phase models
AC/DC mode	AC, ACDC, DC	AC, ACDC
Signal source	INT, VCA, SYNC, EXT, ADD	INT, VCA, SYNC

Power Output (Single-phase)

Note: When two values are indicated with a slash [/], the value before the slash is specification for 100 V range, the value after the slash is specification for 200 V range.

Model name	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S
Output power *2	1.5 kVA	3 kVA	4.5 kVA	6 kVA	7.5 kVA	9 kVA	10.5 kVA	12 kVA	24 kVA	36 kVA
Mode	Single-phase 2-wire Floating output, it can be used with grounding of Lo terminal.									
Rated output voltage	100 V/200 V									
Setting mode	Balanced mode, Unbalanced mode (Only when polyphase system is configured)									
Voltage setting range	Phase voltage	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) For all phases in balanced mode and each phase in unbalanced mode								
	Line voltage	0.0 V to 320.0 V / 0.0 V to 640.0 V (1P3W), 0.0 V to 277.2 V / 0.0 V to 554.2 V (3P4W) Only for balanced mode for sine wave when polyphase system configured.								
	Resolution	Phase voltage setting : 0.1 V, line voltage setting : 0.2 V								
	Accuracy *3	± (0.5% of set + 0.6 V/1.2 V)								
Max. current *4 *5	15 A/7.5 A	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	240 A/120 A	360 A/180 A
	4 times value of maximum current.									
Max. peak current *4 *6	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	AC mode : 40 Hz to 550 Hz, ACDC mode : 1 Hz to 550 Hz									
	Resolution	0.01 Hz								
Accuracy *3	±0.01% of setting (23°C±5°C)									
	Frequency stability *7	±0.005%								
Output waveform	Sine, arbitrary (16 types), clipped sine (3 types)									
Output on phase *8	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg.)									
Output off phase *8	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg. selectable between active or inactive)									
Phase angle setting range (unbalanced mode)	L2 phase : 0 deg. to 359.9 deg. (1P3W)									
	L2 phase : 0 deg. to 359.9 deg., L3 phase : 0 deg. to 359.9 deg. (3P4W)									
	Resolution	0.1 deg.								
DC offset *10	Within ±20 mV (typ., fine adjustment available)									
	Accuracy *9	45 Hz to 65 Hz : ±1.0 deg., 40 Hz to 550 Hz : ±2.0 deg.								
Output power *2	1.5 kW	3 kW	4.5 kW	6 kW	7.5 kW	9 kW	10.5 kW	12 kW	24 kW	36 kW
Rated output voltage	Floating output, it can be used with grounding of Lo terminal.									
Mode	100 V/200 V									
Rated output voltage	-227.0 V to +227.0 V/-454.0 V to +454.0 V									
	Resolution	0.1 V								
Accuracy *12	± (0.5% of set + 0.6 V/1.2 V)									
	Max. current *13	15 A/7.5 A	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	240 A/120 A
Max. instantaneous current *14	4 times value of maximum current.									
Output voltage stability (phase voltage)	Fluctuation with input voltage *15 : within ±0.15% (typ. for DP240S and DP360S)									
	Fluctuation with output current *16 : 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 *17 : within ±0.01%/°C									
Output voltage distortion factor (phase voltage)	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 Output (Single-phase 3-wire and Three-phase)

Model name	Single-phase 3-wire	DP030D	DP060D	DP090D	DP120D	—	—
	Three-phase	—	—	—	—	DP045T	DP090T
Output power *2		3 kVA	6 kVA	9 kVA	12 kVA	4.5 kVA	9 kVA
Mode	Single-phase 3-wire Floating output, it can be used with grounding of Lo terminal.						
Rated output voltage	Phase voltage : 100 V/200 V						
Setting mode	Balanced mode, unbalanced mode						
Voltage setting range	Phase voltage	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) For all phases in balanced mode and each phase in unbalanced mode					
	Line voltage	0.0 V to 320.0 V / 0.0 V to 640.0 V Only for balanced mode for sine wave when polyphase system configured.					
	Resolution	Phase voltage setting : 0.1 V, line voltage setting : 0.2 V					
Accuracy *3	± (0.5% of set + 0.6 V/1.2 V)						
Max. current *4 *5	15 A/7.5 A		30 A/15 A		45 A/22.5 A		60 A/30 A
	30 A/15 A		45 A/22.5 A		60 A/30 A		15 A/7.5 A
Max. peak current *4 *6	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	AC mode : 40 Hz to 550 Hz, ACDC mode : 1 Hz to 550 Hz						
	Resolution	0.01 Hz					
Accuracy *3	±0.01% of setting (23°C±5°C)						
Frequency stability *7	±0.005%						
Output waveform	Sine, arbitrary (16 types), clipped sine (3 types)						
Output on phase *8	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg.)						
Output off phase *8	0.0 deg. to 359.9 deg. variable (resolution 0.1 deg. selectable between active or inactive)						
Phase angle setting range (unbalanced mode)	L2 : 180 deg. ±35 deg					L2 : 120 deg. ±35 deg, L3 : 240 deg. ±35 deg	
	Resolution	0.1 deg.					
DC Offset *10	45 Hz to 65 Hz : ±1.0 deg., 40 Hz to 550 Hz : ±2.0 deg.						
	Within ±20 mV (typ., fine adjustment available)						
Output voltage stability (phase voltage)	Fluctuation with input voltage *15 : within ±0.15%						
	Fluctuation with output current *16 : 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 *17 : within ±0.01%/°C						
Output voltage distortion factor (phase voltage)	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)						

- *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 : For single-phase 3-wire and three-phase, value is phase current.
- *5 : 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
- *6 : For the capacitor input type rectified load (crest factor=4), the rated output voltage, and 45 Hz to 65 Hz
- *7 : For 45 Hz to 65 Hz, the rated output voltage, no load and the resistance load for the maximum current, and the operating temperature.
- *8 : Set for L1 phase, the component of the phase angle setting is added for the other phases.
- *9 : In the case of 50 V or higher, sine wave, and same load conditions and voltage setting for all phases.
- *10 : In the case of AC mode and 23°C ±5°C
- *11 : [V]=Vdc, [A]=Adc, and the polarity is relative to Lo terminal, unless otherwise specified.
- *12 : 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.
- *13 : 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.
- *14 : Instantaneous = within 2 ms, at the rated output voltage
- *15 : In the case of single-phase input, for power input 90 V to 250 V for 1.5 kVA, 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 three-phase three-wire input, for power input 170 V to 250 V, power input 200 V reference. In the case of three-phase four-wire input, for power input is 323 V to 433 V, power input 380 V reference. The resistance load at 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.
- *16 : 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.
- *17 : For power input 200 V or 380 V, no load, the rated output voltage, DC (only single-phase and single-phase output of the multi-phase model) or 45 Hz to 65 Hz.

Power Input

Model name	Single-phase	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S
	Single-phase 3-wire	—	DP030D	—	DP060D	—	DP090D	—	DP120D	—	—
	Three-phase	—	—	DP045T	—	—	DP090T	—	—	—	—
Voltage/Phase *18 (Specify on order)	Overvoltage category II AC100 V to 230 V±10% (Maximum voltage 250 V), 1P AC100 V to 230 V±10% (Maximum voltage 250 V), 1P or AC200 V to 220 V±15% (Maximum voltage 250 V), 3P3W or AC380 V±15% (Maximum voltage 433 V), 3P4W										
Frequency	50 Hz ±2 Hz or 60 Hz ±2 Hz										
Power factor *19	0.95 or more (typ., at AC100 V input) , 0.90 or more (typ., at AC200 V input)									0.90 or more (typ.)	
Efficiency *19	77% or more (typ., at AC200 V input)										
Power consumption (Maximum)	2.25 kVA	4.5 kVA	6.75 kVA	9 kVA	11.25 kVA	13.5 kVA	15.75 kVA	18 kVA	36 kVA	54 kVA	

- *18 : In the 6 kVA or higher models, the output capacity is limited to 4.5 kW for the 170 V or lower input.
- *19 : In the case of AC-INT, the rated output voltage, the resistance load at the maximum current, 45 Hz to 65 Hz output.

Specifications

Single-phase models / polyphase models (1.5 kVA to 36 kVA)

Measurement Function

Model name	Single-phase	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S	
	Single-phase 3-wire	DP030D	DP060D	DP090D	DP120D	—	—	—	—	—	—	
	Three-phase	DP045T	DP090T	—	—	—	—	—	—	—	—	
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 *20	RMS value	Phase voltage: 250.0 V/500.0 V; Line voltage: 500.0 V/1000.0 V (single-phase three-wire); 433.0 V/866.0 V (three-phase)										
		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)	Full scale	±250.0 V/±500.0 V										
	Resolution	0.1 V										
Current *21	RMS value	Full scale	20 A/10 A	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	320 A/160 A	480 A/240 A
		Resolution	0.01 A									
	DC average (avg) (only single phase)	Full scale	±20 A/±10 A	±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	±320 A/±160 A	±480 A/±240 A
		Resolution	0.01 A									
Peak value (pk)	Full scale	±80 A/±40 A ±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										
Max/Min individual display	Hold	Hold the maximum values of I max I and I min I with the polarity (with the clear function)										
Power *22	Active (W)	Full scale	1800 W	3600 W	5400 W	7200 W	9000 W	10800 W	12600 W	14400 W	28800 W	43200 W
		Resolution	0.1 W/1 W (1000 W or higher)									
	Apparent (VA) *23	Full scale	2250 VA	4500 VA	6750 VA	9000 VA	11250 VA	13500 VA	15750 VA	18000 VA	36000 VA	54000 VA
		Resolution	0.1 VA/1 VA(1000 VA or higher)									
Reactive (var) *23	Full scale	2250 var 4500 var 6750 var 9000 var 11250 var 13500 var 15750 var 18000 var 36000 var 54000 var										
	Resolution	0.1 var/1 var (1000 var or higher)										
Load power factor *23	Range	0.00 to 1.00										
	Resolution	0.01										
Load crest factor	Range	0.00 to 50.00										
	Resolution	0.01										
Synchronization frequency	Range	38.0 Hz to 525.0 Hz										
	Resolution	0.1 Hz										
Harmonic current *24	Range	Up to 40th order.										
	Full scale (RMS)	20 A/10 A 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 320 A/160 A 480 A/240 A										
	Full scale (%)	100%										
	Resolution	0.01 A or 0.1%										0.1 A or 0.1%
CO ₂ emissions	Contents	Instantaneous (kg-CO ₂ /h), integration (t-CO ₂) value for internal loss or output power. CO ₂ emissions coefficient (t-CO ₂ /kWh): variable (resolution: 0.000001)										—

*20 : For phase voltage in the polyphase model.
 *21 : In the case that output current is 5% to 100% of maximum current. For phase current in the polyphase model.
 *22 : In the case of sine wave, 50 V or higher output voltage, and that output current is 10% or higher of maximum current.
 *23 : Excluding DC mode
 *24 : AC-INT mode, fundamental wave 50 Hz/60 Hz only, phase current. This measurement does not conform to IEC or other standards.

Current Limiter

Model name	Single-phase	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S		
	Single-phase 3-wire	DP030D	DP060D	DP090D	DP120D	—	—	—	—	—	—		
	Three-phase	DP045T	DP090T	—	—	—	—	—	—	—	—		
Peak current limiter	Positive current	Setting range (peak value)	+7.5A to +63.0A/ +3.7A to +31.5A	+15.0A to +126.0A/ +7.5A to +63.0A	+22.5A to +189.0A/ +11.2A to +94.5A	+30.0A to +252.0A/ +15.0A to +126.0A	+37.5A to +315.0A/ +18.7A to +157.5A	+45.0A to +378.0A/ +22.5A to +189.0A	+52.5A to +441.0A/ +26.2A to +220.5A	+60.0A to +504.0A/ +30.0A to +252.0A	+120.0A to +1008.0A/ +60.0A to +504.0A	+180.0A to +1512.0A/ +90.0A to +756.0A	
	Negative current	Setting range (peak value)	-63.0A to -7.5A/ -31.5A to -3.7A	-126.0A to -15.0A/ -63.0A to -7.5A	-189.0A to -22.5A/ -94.5A to -11.2A	-252.0A to -30.0A/ -126.0A to -15.0A	-315.0A to -37.5A/ -157.5A to -18.7A	-378.0A to -45.0A/ -189.0A to -22.5A	-441.0A to -52.5A/ -220.5A to -26.2A	-504.0A to -60.0A/ -252.0A to -30.0A	-1008.0A to -120.0A/ -504.0A to -60.0A	-1512.0A to -180.0A/ -756.0A to -90.0A	
		Resolution	0.1A										
		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)										
RMS current limiter	Setting range (RMS)	0.8A to 15.8A/ 0.8A to 7.9A	1.5A to 31.5A/ 1.5A to 15.8A	2.3A to 47.3A/ 2.3A to 23.7A	3.0A to 63.0A/ 3.0A to 31.5A	3.8A to 78.8A/ 3.8A to 39.4A	4.5A to 94.5A/ 4.5A to 47.3A	5.3A to 110.3A/ 5.3A to 55.2A	6.0A to 126.0A/ 6.0A to 63.0A	12.0A to 252.0A/ 12.0A to 126.0A	18.0A to 378.0A/ 18.0A to 189.0A		
	Resolution	0.1A											
	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.

Power Unit Energization Setting

Model name	Single-phase	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S
	Single-phase 3-wire	DP030D	DP060D	DP090D	DP120D	—	—	—	—	—	—
	Three-phase	DP045T	DP090T	—	—	—	—	—	—	—	—
Number of units		1	2	3	4	5	6	7	8	8	8
Energizing setting*25		No	Yes								

*25 : Can be set for only a model with more than one unit.

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
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. 3) Phase angle setting is only for the polyphase system. Also, the start phase and the stop phase are set for L1 phase and the setting value is added to each phase angle of L2 and L3 phase.

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).
Operation within step	Constant, keep, linear sweep
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.
Environment	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
Interface	USB 1.1 full-speed	

General Information

Model name	Single-phase	DP015S	DP030S	DP045S	DP060S	DP075S	DP090S	DP105S	DP120S	DP240S	DP360S					
	Single-phase 3-wire	—	DP030D	—	DP060D	—	DP090D	—	DP120D	—	—					
	Three-phase	—	—	DP045T	—	—	DP090T	—	—	—	—					
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	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		860×1463×649	1290×1463×649			
Weight (approx.)	38 kg		50 kg		70 kg		82 kg		110 kg		125 kg		140 kg	155 kg	345 kg	510 kg
Chassis	Type1			Type2			Type3			Type4		Type5		Type6		
Accessories	Instruction manual, control software, LabVIEW driver (version 8.6 or higher), power cable															

Note : The contents of this catalog are current as of January 30th, 2020
 *Products appearance and specifications are subject to change without notice.
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