Ultra-Compact AC/DC Power Supply (CV/CF)

PCR-WE/WE2 Series

LAN LXI USB GPIB (OPTION) RS232C CE

Dimensions / Weight

PCR1000WE:	430(16.93″)W X 129.2(5.09″)H X 655(25.79″)Dmm/	16kg(35.27lbs)
PCR2000WE:	430(16.93″)W X 129.2(5.09″)H X 655(25.79″)Dmm/	20kg(44.09lbs)
PCR3000WE2:	430(16.93″)W X 129.2(5.09″)H X 655(25.79″)Dmm/	23kg(50.71lbs)
PCR6000WE2R:	430(16.93″)W X 262(10.32″)H X 550(21.65″)Dmm/	42kg(92.59lbs)
PCR6000WE2:	430(16.93″)W X 262(10.32″)H X 550(21.65″)Dmm/	43kg(94.80lbs)
PCR12000WE2R:	430(16.93″)W X 389(15.32″)H X 550(21.65″)Dmm/	66kg(145.51lbs)
PCR12000WE2:	430(16.93″)W X 389(15.32″)H X 550(21.65″)Dmm/	65kg(143.3lbs)
PCR18000WE2R:	430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm/	120kg(264.56lbs)
PCR18000WE2:	430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm/	120kg(264.56lbs)
PCR24000WE2R:	430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm/	130kg(286.60lbs)
PCR24000WE2:	430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm/	130kg(286.60lbs)
PCR30000WE2R:	430(16.93″)W X 944(37.17″)H X 550(21.65″)Dmm/	160kg(352.74lbs)
PCR30000WE2:	430(16.93″)W X 944(37.17″)H X 550(21.65″)Dmm/	160kg(352.74lbs)
PCR36000WE2R:	430(16.93″)W X 944(37.17″)H X 550(21.65″)Dmm/	180kg(396.83lbs)
PCR36000WE2:	430(16.93″)W X 944(37.17″)H X 550(21.65″)Dmm/	170kg(374.79lbs)

*6 kVA in a 6U frame and up to 36 kVA in a single unit with regenerative capabilities.*1 The next generation of high-power programmable AC power supplies.*

The PCR-WE/WE2 is a series of compact, high power switching AC power supplies that brings high power in small packages. The 15 model line-up ranges from 1 kVA to 36 kVA AC/DC with switchable single & 3 phase output from 6 kVA and up. The PCR-WE/WE2 series also features a regenerative mode*1 that can drastically reduce power consumption and cut the costs of operation. The PCR-WE/WE2 supports mix-and-match parallel operation*2 up to 144 kVA for large-scale test systems.

*1 Only "R" models (PCR-WE2R) with 3-phase 200 V input. Regeneration on premises only.
*2 Parallel operation is available for 6 kVA models and up with a maximum of 4 units. Same model combination is not required. If the input wiring system is the same, parallel operation is possible even among models with different power capaci-ties. Up to 48 kVA per phase.

Features

- Compact Size: 6 kVA in 6U (PCR6000WE2)
- Up to 36 kVA in a single unit
- 100% Regenerative power capability*1
- Mix-and-match parallel operation up to 144 kVA
  Same model set up is not required (6 kVA or more)
- Flexible Digital Interface: LAN (LXI), USB, RS232C, GPIB (factory option)
- Power line disturbance simulation features
- Sequence function for advanced simulation
- External analog, digital control function (standard)
- Power-saving function
- DC output (100% of rated power)
- Output Frequency up to 5 kHz
- Output Rating: AC 0 to 310 Vrms, DC 0 to ±438 V

*1 Only "R" models (PCR-WE2R) with 3-phase 200 V input. Regeneration on premises only.

Accessories

Cable tie, External control (DIGITAL I/O) connector, Heavy object warning label, Operation Manual, Quick Reference, CD-ROM, Safety Information

*Power cord is not included for the PCR-WE/WE2 Series.
Please purchase the optional accessory separately.

Functions

■ Regeneration function
*Only for 3-phase 200 V input models with “R” in the model name. Regenerative capabilities of the PCR-WE have been increased to 100%, despite being a switching inverter power supply. 100% re-generative capabilities have been achieved with no limitations in reverse load flow time.

■ Low ripple noise
Low ripple noise performance achieved despite switching inverter.

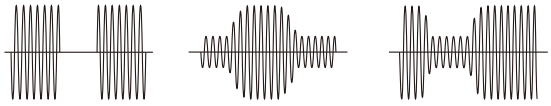
■ Eco function (energy-saving function)
The series is equipped with a sleep mode that reduces overall power consumption after a certain amount of time with no output, as well as an energy saving mode that only draws power from necessary modules resulting in reduced power consumption and cost of opera-tion.

■ Various communication interface options
LAN, USB and RS232C standard digital interface.
GPIB is available as an optional interface board.

■ DC output – 100% of rated power
In addition to AC output, DC output as well as AC+DC output are available for a wide range of industries including R&D in the chemistry and physics fields.

■ Various measurement functions
Output effective value voltage/current, peak voltage/current, effective power/apparent power and power factor can be measured. Harmonic analysis (up to the 50 th harmonic) of output voltage/current is possible.

■ Power line abnormality simulation
This feature allows the PCR-WE/WE2 series to simulate power line abnormality simulation including power outtages, voltage dips, and voltage pops. This can be used to test switching power supplies and other electronic equipment.

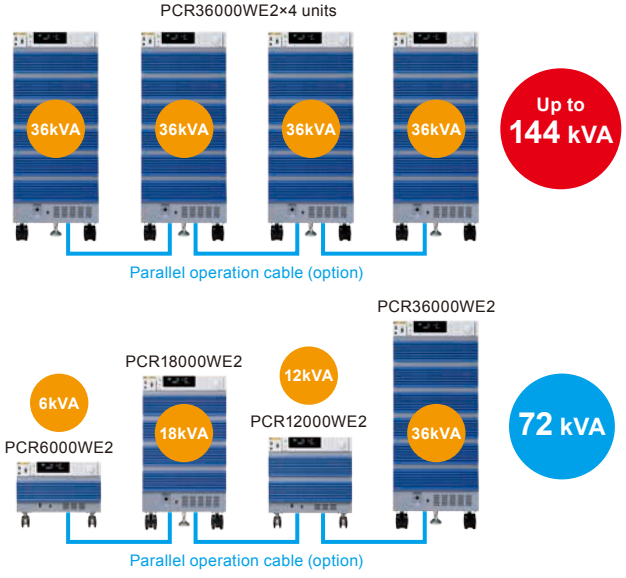


Functions

■ Parallel operation function

Parallel operation among all models available up to 144 kVA (maximum 4 units).

*Input voltage must be the same for models 6 kVA and higher



Options

■ Input power cable

AC5.5-1P3M-M6C-3S (For PCR1000WE/2000WE(1P2W input))
AC14-1P3M-M6C-3S (For PCR3000WE2(1P2W input))
AC5.5-1P3M-M5C-4S (For PCR6000WE2R(3P3W input))
AC5.5-1P3M-M5C-5S (For PCR6000WE2/PCR12000WE2(3P4W input))
AC14-1P3M-M5C-4S (For PCR12000WE2R(3P3W input))
AC22-1P3M-M8C-4S (For PCR18000WE2R(3P3W input))
AC8-1P3M-M5C-5S (For PCR18000WE2(3P4W input))
AC38-1P3M-M8C-4S (For PCR24000WE2R(3P3W input))
AC14-1P3M-M5C-5S (For PCR24000WE2(3P4W input))
AC60-1P3M-M8C-4S (For PCR30000WE2R/36000WE2R(3P3W input))
AC22-1P3M-M5C-5S (For PCR30000WE2/36000WE2(3P4W input))

■ Parallel operation cable

PC01-PCR-WE(1 m)

■ Power linkage cable

LC01-PCR-LE(1 m)

■ GPIB interface board

IB07-PCR-WE factory option

■ Base hold angle

OP03-KRC

■ External control connector

OP01-PCR-WE(DIGITAL I/O)
OP02-PCR-WE(ANALOG I/O)

■ Rack mount brackets

For PCR1000WE/2000WE/3000WE2
KRB3-TOS (EIA inch rack)
KRB150-TOS (JIS millimeter rack)
For PCR6000WE2(R)
KRB6 (EIA inch rack)
KRB300 (JIS millimeter rack)
For PCR12000WE2(R)
KRB9 (EIA inch rack)
KRB400-PCR-LE (JIS millimeter rack)

■ Sequence creation software

SD032-PCR-WE(Wavy for PCR-WE)

[NOTICE] To users of the PCR-L/LA Series

The PCR-LE Series is not compatible with the previous product, the PCR-L/LA Series. Consequently, it is not possible to upgrade a system if it includes a prior PCR-L/LA Series in the system. Further, along with this, in principle options cannot be used, with some exceptions. Please be considered of this notice for your planning of future system. If you have any other questions, please contact our sales department for details.

PCR-WE/WE2 Series Specifications

Unless specified otherwise, the specifications are for the following settings and conditions.
● The product is warmed up for at least 30 minutes (with current flowing).
● TYP: These are typical values that are representative of situations where the product operates in an environment with an ambient temperature of 23 °C. They are not guaranteed performance values.
● setting: Indicates a setting. ● reading: Indicates a reading. ● f.s: Indicates full scale.

Item/Model		Single-phase output model			Single-phase/three-phase switchable model					
		PCR 1000WE	PCR 2000WE	PCR 3000WE2	PCR 6000WE2 / PCR 6000WE2R	PCR 12000WE2 / PCR 12000WE2R	PCR 18000WE2 / PCR 18000WE2R	PCR 24000WE2 / PCR 24000WE2R	PCR 30000WE2 / PCR 30000WE2R	PCR 36000WE2 / PCR 36000WE2R
Input (AC rms)										
Voltage (nominal)	1P2W input model	100 Vrms to 120 Vrms, 200 Vrms to 240 Vrms *1			-					
	3P3W input model	-			200 Vrms to 240 Vrms (3 phase line voltage) *PCR-WE2R models					
	3P4W input model	-			380 Vrms to 480 Vrms (3 phase line voltage) *PCR-WE2 models					
Voltage (allowable varation range)	1P2W input model	85 Vrms to 132 Vrms, 170 Vrms to 250 Vrms *1			-					
	3P3W input model	-			170 Vrms to 250 Vrms (3 phase line voltage) *PCR-WE2R models					
	3P4W input model	-			323 Vrms to 519 Vrms (3 phase line voltage) *PCR-WE2 models					
Nominal input Frequency		50 Hz to 60 Hz								
Input frequency range		45 Hz to 65 Hz								
Apparent power		1.4 kVA or less	2.7 kVA or less	4 kVA or less	7.8 kVA or less	15.6 kVA or less	23.4 kVA or less	31.2 kVA or less	39 kVA or less	46.8 kVA or less
Power factor *2		0.95 (TYP)			0.97 (TYP) 3P3W input model / 0.95 (TYP) 3P4W input model					
Max. current	1P2W input model	17 A / 8.5 A	32 A / 16 A	48 A / 24 A	-					
	3P3W input model	-			27 A	53 A	80 A	106 A	133 A	159 A
	3P4W input model	-			14 A	28 A	42 A	56 A	70 A	84 A
Hold-up time for power interruption *2		10 ms								

*1 100 V/200 V input system (auto select)
*2 When the output voltage is 100 V or 200 V, the output current is the rated value, the load power factor is 1, and the output frequency is between 40 Hz and 1 kHz.

■ Regeneration function

*Only "R" models (PCR-WE2R) with 3-phase 200 V input. Regeneration on premises only.

Item/Model		Single-phase/three-phase switchable model					
		PCR 6000WE2R	PCR 12000WE2R	PCR 18000WE2R	PCR 24000WE2R	PCR 30000WE2R	PCR 36000WE2R
Regeneration function							
Maximum regenerated power *1		6 kVA	12 kVA	18 kVA	24 kVA	30 kVA	36 kVA
Maximum reverse power flow current *1 *2	1P2W	60 A/ 30 A	120 A/ 60 A	180 A/ 90 A	240 A/ 120 A	300 A/ 150 A	360 A/ 180 A
	1P3W 3P	20 A/ 10 A	40 A/ 20 A	60 A/ 30 A	80 A/ 40 A	100 A/ 50 A	120 A/ 60 A
Regeneration efficiency *3		85 % (TYP)					
Output current harmonic distortion		THD: 5 % or less, each harmonic: 3 % or less (2nd to 40th)					

*1 When the output phase voltage is between 100 Vac and 155 Vac or 200 Vac and 310 Vac, the output current is reduced by the output voltage.
When the output frequency is between 1 Hz and 40 Hz, the output current is reduced by the output frequency. The output current is 70 % at 1 Hz.
*2 When the output voltage is 100 V or 200 V and the output frequency is between 40 Hz and 1 kHz (when the current phase is -90 deg to -180 deg or 90 deg to 180 deg relative to the output voltage)
*3 At output voltage 100 V/200 V, rated output current, sine wave, load power factor 1, output frequency 45 Hz to 65 Hz

PCR-WE/WE2 Series Specifications

Item/Model		Single-phase output model		Single-phase/three-phase switchable model						
		PCR 1000WE	PCR 2000WE	PCR 3000WE2	PCR 6000WE2 PCR 6000WE2R	PCR 12000WE2 PCR 12000WE2R	PCR 18000WE2 PCR 18000WE2R	PCR 24000WE2 PCR 24000WE2R	PCR 30000WE2 PCR 30000WE2R	PCR 36000WE2 PCR 36000WE2R
Output										
AC voltage *1	Rating	155 V / 310 V *2								
	Setting range	0 V to 157.5 V / 0 V to 315.0 V								
	Resolution	0.1 V								
	Accuracy *3 *4 (Phase voltage)	±(0.3 % of setting + 0.3 V) / ±(0.3 % of setting + 0.6 V)								
	Accuracy *3 *4 (line voltage)	±(0.3 % of setting + 0.3 V) / ±(0.3 % of setting + 0.6 V) *5								
Maximum current *1 *6	Single-phase output	10 A / 5 A	20 A / 10 A	30 A / 15 A	60 A / 30 A	120 A / 60 A	180 A / 90 A	240 A / 120 A	300 A / 150 A	360 A / 180 A
	Single-phase three-wire output, Three-phase output	-		10 A / 5 A	20 A / 10 A	40 A / 20 A	60 A / 30 A	80 A / 40 A	100 A / 50 A	120 A / 60 A
Phase		Single-phase		Single-phase Two-wire, Single-phase Three-wire, and Three-phase Four-wire						
Power capacity	Single-phase output	1 kVA	2 kVA	3 kVA	6 kVA	12 kVA	18 kVA	24 kVA	30 kVA	36 kVA
	Three-phase output	-								
	Single-phase three-wire output			2 kVA	4 kVA	8 kVA	12 kVA	16 kVA	20 kVA	24 kVA
Maximum peak current *11		Maximum current x 4								
Inrush current capacity *3		Maximum current x 3 (0.07 s)			Maximum current x 1.4 (0.5 s)					
Load power factor		0 to 1 (leading or lagging)								
Frequency	Setting range	1 Hz to 5 kHz *7 (5 kHz -3dB, <40 Hz Derating)								
	Resolution	0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 1000 Hz), 1 Hz (1000 Hz to 5000 Hz)								
	Accuracy *3	±0.01 % , Temperature coefficient : ±0.005 %/°C								
Phase	Resolution	-		0.1°(1 Hz to 500 Hz), 1°(500 Hz to 4 kHz), 2°(4 kHz or more)						
	Accuracy *3	-		Within 120°±(0.4°+ 2.5 µs) *8 Within (120° ± (0.4° + fo×0.9×10-3°)) fo: frequency [kHz]						
DC voltage	Rating *1	-219 V to +219 V / -438 V to +438 V *2								
	Setting range *1	-222.5 V to +222.5 V / -445.0 V to +445.0 V								
	Resolution	0.1 V								
	Accuracy *9	±(0.05 % of setting + 0.1 V)								
	DC Maximum current *6	10 A / 5 A	20 A / 10 A	30 A / 15 A	60 A / 30 A	120 A / 60 A	180 A / 90 A	240 A / 120 A	300 A / 150 A	360 A / 180 A
	Power capacity	1 kW	2 kW	3 kW	6 kW	12 kW	18 kW	24 kW	30 kW	36 kW
Efficiency *10		82 %(TYP)			85 %(TYP)					
Output voltage stability (phase voltage)										
Line regulation *12		Within ±0.1 %								
Load regulation *13		Within ±0.1 V/±0.2 V (1 Hz to 100 Hz) Within ±0.3 V/±0.6 V (100.1 Hz to 500 Hz) Within ±1 V/±2 V (500.1 Hz to 1 kHz)					Within ±0.2 V/±0.4 V (1 Hz to 100 Hz) Within ±0.3 V/±0.6 V (100.1 Hz to 500 Hz) Within ±1 V/±2 V (500.1 Hz to 1 kHz)			
Variation according to output frequency *14		When the output voltage correction function is enabled: within ±0.3 % (1 Hz to 1 kHz), within ±10 % (1001 Hz to 5 kHz) When the output voltage correction function is disabled: 5 kHz-3dB								
Ripple noise *15		≤ 0.25 Vrms				≤ 0.3 Vrms	≤ 0.4 Vrms	≤ 0.5 Vrms	≤ 0.6 Vrms	≤ 0.7 Vrms
Temperature coefficient *16		100ppm/°C (TYP)								
Total harmonic distortion *17		0.3 % or less (1 Hz to 100 Hz), 0.5 % or less (100.1 Hz to 330 Hz), 1.5 %/kHz or less (330.1 Hz to 5 kHz)								
Transient response *18		Response FAST: 55 µs (TYP)								
Response speed Tr/Tf *19		Response FAST: 55 µs (TYP), Response MEDIUM: 100 µs (TYP), Response SLOW: 300 µs (TYP)								
Measurement										
Voltage Rms value	Resolution	0.1 V								
	Accuracy *20	DC, 40 Hz to 999.9 Hz: ±(0.3 % of reading +1 V) 1 kHz to 5 kHz: ±(0.5 % of reading +1 V)								
Current Rms value	Resolution	0.01 A				0.1 A				
	Accuracy *20 *21	45 Hz to 65 Hz: ±(0.3 % of reading + 0.3 % of f.s) DC, 40 Hz to 999.9 Hz: ±(0.6 % of reading + 0.6 % of f.s) 1 kHz to 5 kHz: ±(1.2 % of reading + 1.2 % of f.s)									
Current Peak value	Resolution	0.01 A				0.1 A			1 A	
	Accuracy *20 *22	4 % of f.s								
Active power	Resolution	1 W				10 W				
	Accuracy *20 *21 *23	45 Hz to 65 Hz: ±(0.3 % of reading + 0.3 % of f.s)								
Apparent power	Resolution	1 VA				10 VA				
power factor	Resolution	0.01								
Phase difference	Resolution	0.1°								
Harmonic measure-ment	Frequency range (fundamental wave)	10 Hz to 1 kHz								
	Upper limit of harmonic analysis	5th to 50th								
	FFT data length	4096								
	Measurement items	Rms voltage and current, phase angle, THD								
Recommended calibration period		1 year								

*1 Output L range, H range
*2 The spec guaranteed voltage range is 1 V to 155 V and 2 V to 310 V(AC).
The spec guaranteed voltage range is 1.4 Vdc to 219 Vdc, 2.8 Vdc to 438 Vdc(DC).
*3 At an ambient temperature of 23 °C±5 °C.
*4 At no load, output frequency 45 Hz to 65 Hz
*5 At the phase angle of 120° of each phase
*6 When the output voltage is between 100 Vac and 155 Vac or 200 Vac and 310 Vac, the output current is reduced by the output voltage.
When the output frequency is between 1 Hz and 40 Hz, the output current is reduced by the output frequency. The output current is 70 % at 1 Hz.
*7 On the 500 Hz limit model, the frequency is limited to 1 Hz to 500.0 Hz for three-phase output.
*8 Example in which angle conversion is performed at a given frequency, within 120° ± 0.5° (at 60 Hz output), within 120° ± 0.8°(at 400 Hz output)
*9 At no load, 23 °C±5 °C.
*10 At output voltage 100 V/200 V, rated output current, sine wave, load power factor 1, output frequency 40 Hz to 1 kHz
*11 Depending on load input impedance
*12 For input voltage changes within the rated range.
*13 For output current changes within 0 to 100 % of the rating. When the output voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1.
When the response mode is set to FAST. At the output terminal block. When the compensation function is not used.
*14 Voltage variation over 40 Hz to 5 kHz in AC mode with 55 Hz as the reference. When the output voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. When the response mode is set to FAST. At the output terminal block.
*15 5 Hz to 1 MHz components in DC mode.
*16 For changes within the operating temperature range At output phase voltage 100 V/200 V, no load.
*17 When the output phase voltage is between 80 V and 155 V or 160 V and 310 V, the load power factor is 1. When the response mode is set to FAST. At the output terminal block.
*18 When the output voltage is 100 V or 200 V, the load power factor is 1, and the output current changes from 0 A to the rated value and from the rated value to 0 A.
*19 At 10 % to 90 % of the output voltage.
*20 At an ambient temperature of 23 °C±5 °C.
*21 At 10 % to 100 % of maximum rated current, sine wave.
*22 Pulse height of sine wave.
*23 At a power factor of 1

PCR-WE/WE2 Series Specifications

Item/Model			Single-phase output model		Single-phase/three-phase switchable model						
			PCR 1000WE	PCR 2000WE	PCR 3000WE2	PCR 6000WE2 PCR 6000WE2R	PCR 12000WE2 PCR 12000WE2R	PCR 18000WE2 PCR 18000WE2R	PCR 24000WE2 PCR 24000WE2R	PCR 30000WE2 PCR 30000WE2R	PCR 36000WE2 PCR 36000WE2R
Output impedance setting											
L Range	Resistance component	1P	0 Ω to 2000 mΩ	0 Ω to 1000 mΩ	0 Ω to 667 mΩ	0 Ω to 333 mΩ	0 Ω to 167 mΩ	0 Ω to 111 mΩ	0 Ω to 83 mΩ	0 Ω to 67 mΩ	0 Ω to 56 mΩ
		1P3W 3P	-	-	0 Ω to 2000 mΩ	0 Ω to 1000 mΩ	0 Ω to 500 mΩ	0 Ω to 333 mΩ	0 Ω to 250 mΩ	0 Ω to 200 mΩ	0 Ω to 167 mΩ
	Reactance component	1P	80 μH to 2000 μH	40 μH to 1000 μH	27 μH to 667 μH	13 μH to 333 μH	7 μH to 167 μH	4 μH to 111 μH	3 μH to 83 μH	3 μH to 67 μH	2 μH to 56 μH
		1P3W 3P	-	-	80 μH to 2000 μH	40 μH to 1000 μH	20 μH to 500 μH	13 μH to 333 μH	10 μH to 250 μH	8 μH to 200 μH	7 μH to 167 μH
H Range	Resistance component	1P	0 Ω to 8000 mΩ	0 Ω to 4000 mΩ	0 Ω to 2667 mΩ	0 Ω to 1333 mΩ	0 Ω to 667 mΩ	0 Ω to 444 mΩ	0 Ω to 333 mΩ	0 Ω to 267 mΩ	0 Ω to 222 mΩ
		1P3W 3P	-	-	0 Ω to 8000 mΩ	0 Ω to 4000 mΩ	0 Ω to 2000 mΩ	0 Ω to 1333 mΩ	0 Ω to 1000 mΩ	0 Ω to 800 mΩ	0 Ω to 667 mΩ
	Reactance component	1P	320 μH to 8000 μH	160 μH to 4000 μH	107 μH to 2667 μH	53 μH to 1333 μH	27 μH to 667 μH	18 μH to 444 μH	13 μH to 333 μH	11 μH to 267 μH	9 μH to 222 μH
		1P3W 3P	-	-	320 μH to 8000 μH	160 μH to 4000 μH	80 μH to 2000 μH	53 μH to 1333 μH	40 μH to 1000 μH	32 μH to 800 μH	27 μH to 667 μH
General											
Insulation resistance	Between input and chassis, output and chassis, and input and output		500 Vdc, 10 MΩ or more								
Withstand voltage	Between input and chassis, output and chassis, and input and output		1.5 kVac, 2150 Vdc for 1 minute								
Electromagnetic compatibility (EMC) *1 *2			Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN 61326-1 (Class A*3), EN 55011 (Class A*3, Group 1*4), EN 61000-3-2, EN 61000-3-3 Applicable under the following conditions. The maximum length of all cabling and wiring connected to the product must be less than 3 m.								
Safety *1			Complies with the requirements of the following directive and standards. Low Voltage Directive 2014/35/EU*2 EN 61010-1 (Class I*5 , Pollution Degree 2*6)								
Environ-mental conditions	Operating environment		Indoor use, overvoltage category II								
	Operating temperature range		0 °C to +50 °C (32 °F to +122 °F)								
	Storage temperature range		-10 °C to +60 °C (14 °F to +140 °F)								
	Operating humidity range		20 %rh to 80 %rh (no condensation).								
	Storage humidity range		90 %rh or less (no condensation).								
	Altitude		Up to 2000 m								
Weight			16 kg(35.27 lbs)	20 kg(44.09 lbs)	23 kg(50.71 lbs)	43 kg(94.80 lbs) 42 kg(92.59 lbs)	65 kg(143.3 lbs) 66 kg(145.51 lbs)	120 kg(264.56 lbs)	130 kg(286.60 lbs)	160 kg(352.74 lbs)	170 kg(374.79 lbs) 180 kg(396.83 lbs)
Input terminal			M6			M5		200 V input model: M8		400 V input model: M5	
Output terminals			M6			M5		M6		M8	

*1 Does not apply to specially ordered or modified products.
*2 Only on models that have the CE marking on the panel.
*3 This is a Class A instrument. This product is intended for use in an industrial environment. This product may cause interference if used in residential areas.
Such use must be avoided unless the user takes special measures to reduce electromagnetic emis-sions to prevent interference to the reception of radio and television broadcasts.
*4 This is a Group 1 instrument. This product does not generate and/or use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose.
*5 This product confirms to Class I. Be sure to ground the protective conductor terminal of this product. If not grounded properly, safety is not guaranteed.
*6 Pollution is addition of foreign matter (solid, liquid or gaseous) that may produce a reduction of dielectric strength or surface resistivity.
Pollution Degree 2 assumes that only non-conductive pollution will occur except for an occasional temporary con-ductivity caused by condensation.

■ Limit values and protection functions

			Setting range	Resolution
Voltage protection	Upper AC voltage limit Lower AC voltage limit		0.0 V to 315.0 V	0.1 V
	Upper DC voltage limit Lower DC voltage limit		-445.5 V to 445.5 V	0.1 V
	Output overvoltage protection(OVP)	Rms value	14.0 V to 489.5 V	0.1 V
		Positive peak value	14.0 V to 489.5 V	0.1 V
		Negative peak value	-489.5 V to -14.0 V	0.1 V
	Power module overvoltage protection		Fixed	-
	Output undervoltage protection (UVP)		0.0 V to 489.5 V	0.1 V
Frequency protection	Upper frequency limit Lower frequency limit		1 Hz to 5000 Hz 1 Hz to 500 Hz on the 500Hz LMT model (for three-phase output)	0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 1000 Hz), 1 Hz (1000 Hz to 5000 Hz)
Current protection	Current limit *1		Maximum output current × 0.1 to maxi-mum output current × 1.1	0.01 A (0.35 A to 100.0 A), 0.1 A (100.0 A to 1000 A)
	Positive peak current limit Negative peak current limit *2		Maximum output current × 0.1 to maxi-mum output current × 4.2	
Overheat protection	Power module overheat protection		Fixed	-
	Fan error		Fixed	-
Overload protection			Rated current or current limit	Current limit resolution
Independent operation detection			Fixed	-
Sensing error detection			±(10 % +10 V) with respect to the output terminal voltage	-

*1 The current that can actually be supplied is 1.1 times the rated current or the current limit, whichever is less.
*2 The current that can actually be supplied is the maximum peak current or the peak current limit, whichever is less.

■ Specifications of the communication interface

USB	Complies with the USB 2.0 specifications; data rate: 480 Mbps (high speed), socket B type, self-powered Complies with the USBTMC-USB488 device class specifications
LAN	IEEE802.3, 100Base-TX Ethernet LXI 1.4 Core 2011 (Extended Functions: HiSLIP, IPv6), data rate: 100 Mbps (auto negotiation, Full Speed) AUTO MDIX function IPv4, RJ45 connector, category 5, straight cable
RS232C	Complies with the EIA232D specifications, asynchronous full duplex, D-SUB 9-pin connector (male), crossover cable (null modem) 9600 bps/ 19200 bps/ 38400 bps/ 57600 bps/ 115200 bps
GPIB (option)	Complies with IEEE Std 488.1-1987 SH1, AH1, T8, L4, SR0, RL0, PP0, DC0, DT0, C0, E1 24-pin connector (receptacle)

Compact AC Power Supply (CV/CF)

PCR-MA Series

LAN LXI USB GPIB OPTION DRIVERS CE

Compact AC power supply using the PWM inverter method

The PCR-MA AC power supply series is a PWM inverter type (switching) power supply that builds on the success of our conventional model, the PCR-M. Maximum output voltage has been increased to 310Vrms AC while maintaining a compact, portable design. The digital interface now includes LAN (LXI) and USB as standard, with GPIB as a factory option for easy integration into any test system. The LXI compliant LAN interface allows the operator to easily monitor and control the instrument via virtual interface wherever they are. Various features including a remote sensing function have been introduced to ensure precise voltage and current measurements. Other features including DC mode, memory functions, and various protections make the PCR-MA the most accessible AC power supply on the market.

Dimensions / Weight

PCR500MA: 214(8.43″)W×124(4.88″)H×350(13.78″)Dmm(inch)/ 6.5 kg(14.33 lbs)
PCR1000MA: 429(16.89″)W×128(5.04″)H×350(13.78″)Dmm(inch)/ 11 kg(24.25 lbs)
PCR2000MA: 429(16.89″)W×128(5.04″)H×450(17.72″)Dmm(inch)/ 16 kg(35.27 lbs)
PCR4000MA: 429(16.89″)W×262(10.31″)H×520(20.47″)Dmm(inch)/ 32 kg(70.54 lbs)

Accessories

Power cord, Cable tie(1 pc.), Core(1 pc.), Packing List(1 pc.), Quick Reference(Japanese 1 sheet, English 1 sheet), Safety Information(1 copy), CD-ROM(1 disc), Heavy object warning label(1 pc.)(Included only with the PCR4000MA)

Features

■ Compact design (PCR500MA)

Small enough to fit on your work desk!
Only 214 W × 124 H × 350 D mm!
Weighs only 6.5 kg and easy to carry!

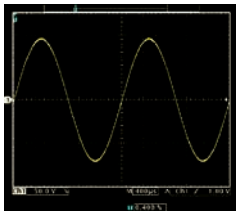
Small and light. Only 6.5 kg (PCR500MA)

Neatly fits on your desk!
(Picture) Left: PCR500MA Right: Electronic Load PLZ164W

Easy to carry with only one hand

■ High-quality output waveform

Output voltage available in two ranges: 0-155 V / 0-310 V. The maximum current is 5 A (155 V range) or 2.5 A (310 V range) with a peak current that can triple the maximum rated current for capacitor input type rectifier loads. The distortion rate of the output waveform is below 0.5%. (PCR500MA)



Options

■ GPIB interface board
IB22

■ Analog interface board
EX08-PCR-MA

■ Rack-mount frames and brackets

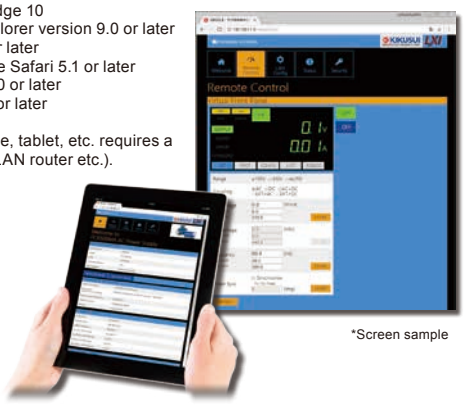
For the PCR500MA
KRA150 (for JIS metric size)
KRA3 (for EIA inch size)
KBP3-2 (Blank panel)
For the PCR1000MA and PCR2000MA
KRB150-TOS (for JIS metric size)
KRB3-TOS (for EIA inch size)
For the PCR4000MA
KRB300 (for JIS metric size)
KRB6 (for EIA inch size)

Easy access with a built-in web server

Use a browser from a PC, smartphone, or tablet to access the web server built into the PCR-MA series for convenient control and monitoring.

[Recommended browser]
- Requires for the Microsoft Edge 10
- Requires for the Internet Explorer version 9.0 or later
- Requires for the firefox 8.0 or later
- Requires for the safari/mobile Safari 5.1 or later
- Requires for the Chrome 15.0 or later
- Requires for the Opera 11.0 or later

* Connecting with a smartphone, tablet, etc. requires a Wi-Fi environment (wireless LAN router etc.).



*Screen sample

Features

■ Versatile output modes

Three modes (AC, DC, AC+DC) are available. *1

The frequency range is up to 500 Hz (setting resolution: 0.1 Hz).

■ Memory feature

Three combinations of setting, voltage, and frequency can be stored and recalled on the front panel. By recalling memory during output, you can test sudden changes in voltage and frequency. Additionally, when using communication commands, the internal memory can store up to 11 settings.

■ Measurement features

Voltage, current, power, apparent power, reactive power, power factor, crest factor and current peak hold can all be measured. *2

■ Various communication interface options

LAN and USB digital interfaces included as standard.

GPIB optional interface board also available.

■ Analog interface

Analog control is also available with an optional analog interface (EX08-PCR-MA). Input DC signals can be used to change output AC voltage and boost the input waveform.

*1: AC+DC mode is only valid with communication command.
*2: You can use the communications interface to measure apparent power (VA), reactive power (VAR), power factor (PF), crest factor (CF), and held current peak.

PCR-MA Series Specifications

■ Specifications of the main unit

Note: “TYP value” indicates a typical value and does not guarantee the performance. "rdng" indicates a reading on the device.

		PCR500MA	PCR1000MA	PCR2000MA	PCR4000MA
Input voltage		Nominal input rating: 100 Vac to 120 Vac/200 Vac to 240 Vac, 50 Hz/60 Hz, single phase			
		Voltage range: 90Vac to 132Vac/180Vac to 264Vac (auto detection at power-on), Single phase, 47 Hz to 63 Hz			
Input current	Input 90 V to 115 V	8 A/6.3 A or less	16 A/12.5 A or less	32 A/25 A or less	64 A/50 A or less
	Input 180 V to 230 V	4 A/3.2 A or less	8 A/6.3 A or less	16 A/12.5 A or less	32 A/25 A or less
Input power factor *1		0.9 (standard value)			
Efficiency		≥ 70 %			
Output voltage		0 V to 155 V/0 V to 310V AC (output 155 V/310 V range)			
		-219 V to +219 V/-438 V to +438 V DC (output 155 V/310 V range)			
Setting Resolution		0.1 V			
Output capacity		AC mode: 500 VA at maximum	AC mode: 1000 VA at maximum	AC mode: 2000 VA at maximum	AC mode: 4000 VA at maximum
		DC mode: 400 W at maximum	DC mode: 800 W at maximum	DC mode: 1600 W at maximum	DC mode: 3200 W at maximum
Maximum current		AC mode: 5 A/2.5 A *2	AC mode: 10 A/5 A *2	AC mode: 20 A/10 A *2	AC mode: 40 A/20 A *2
		DC mode: 4 A/2 A *3	DC mode: 8 A/4 A *3	DC mode: 16 A/8 A *3	DC mode: 32 A/16 A *3
Output frequency		Range: 40.0 Hz to 500.0 Hz, setting: 0.1 Hz, accuracy: ≤ ±2 × 10^{-4}			
Output waveform distortion ratio		≤ 0.5 % (At output voltage 50 V to 155 V/100 V to 310 V, load power factor 1, in AC mode)			
Accuracy of voltmeter		±(0.5 % of reading +0.3 V/0.6 V) (Output voltage greater than 13.5 V/27 V and output frequency 45 Hz to 65 Hz/DC at 23 ± 5 °C)			
Accuracy of ammeter (RMS)		±(0.5 % of reading + 0.02 A/0.01 A)	±(0.5 % of reading + 0.04 A/0.02 A)	±(0.5 % of reading + 0.08 A/0.04 A)	±(0.5 % of reading + 0.16 A/0.08 A)
		(5 % to 100 % of the maximum output current and output frequency 45 Hz to 65 Hz or DC at 23 ± 5 °C)			
Operating temperature and humidity range		0°C to 40°C, 20 % to 80 %rh (no condensation)			
Storage temperature and humidity range		-10°C to 60°C, 0 % to 90 %rh (no condensation)			

*1 At output voltage 100 V/200 V (output 155 V/310 V range), maximum current, load power factor 1.hen the output voltage is 100 V/200 V (in the 135 V/270 V range), the current is maximum, and the load power factor is 1.
*2 At output voltage 1 V to 100 V/2 V to 200 V. Limited by the power capacity at output voltage 100 V to 155 V/200 V to 310 V.
*3 At output voltage 1.4 V to 100 V/2.8 V to 200 V. Limited by the power capacity at output voltage 100 V to 219 V/200 V to 438 V.

■ Specifications of the communication interface

LAN	Complies with IEEE 802.3 100base-TX/10Base-T Ethernet 1.5 LXI Device Specification 2016 RJ-45 connector
USB	Complies with the USB 2.0 specifications; data rate: 480 Mbps (HighSpeed), TypeB socket
GPIB (IB22: optional)	Complies with IEEE Std 488.1-1978 SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1
Common	Software protocol: IEEE 488.2 STD 1992 Command language: SCPI Specification 1999.0

■ Analog interface specifications (EX08-PCR-MA: optional)

Input terminal	Maximum allowable input voltage		±15 V
	Type		BNC
	Input impedance		10 kΩ ±5 % (unbalanced)
	Isolation voltage		42 Vpk
EXT-AC mode *1	Input voltage range		-10 V to +10 V (DC)
	Voltage amplification rate (155 V/310 V range)		15.5 times, 31 times
	Frequency setting range		40 Hz to 500 Hz
EXT-DC mode	Input voltage range*2	ATT OFF	-2.19 V to +2.19 Vpeak (0 V to 155 Vrms sine wave)
		ATT ON	-10V to +10V (DC)
	Input frequency range	ATT OFF	40 Hz to 500 Hz (sine wave), 40 Hz to 100 Hz (square wave), DC
	Frequency characteristics	ATT OFF	500 Hz -0.3 dB (TYP) 55 Hz as the reference
	Voltage amplification rate (155 V/310 V range)	ATT OFF	100 times, 200 times
		ATT ON	21.9 times, 43.8 times
Waveform distortion ratio*3			≤ main unit specifications +0.5 %

*1 ATT ON at all times *2 Measurable ranges of voltage, current, and power are DC and 40 Hz to 500 Hz. Set the frequency according to the input waveform period.
*3 For DC input in EXT-AC mode and sine wave with 0.1% or less distortion in EXT-DC mode.

■General specifications

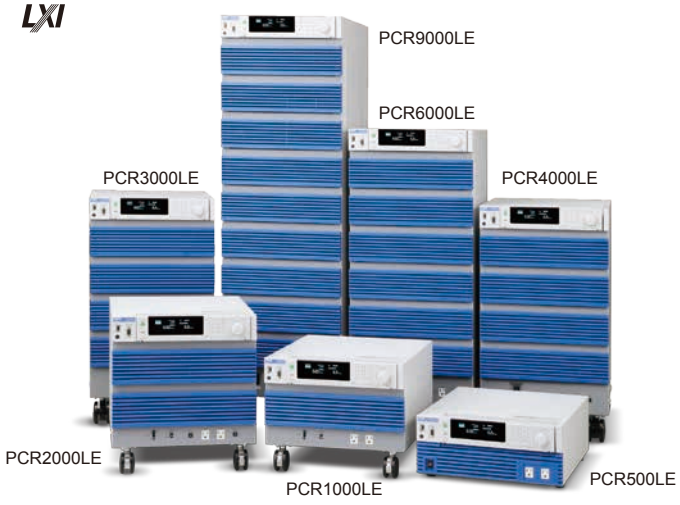
Safety *1	Complies with the requirements of the following directive and standards. Low Voltage Directive 2014/35/EU*2 EN 61010-1 (Class I*5, Pollution Degree 2*6)
Electromagnetic compatibility *1, *2	Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN 61326-1 (Class A*3) EN 55011 (Class A*3, Group 1*4) EN 61000-3-2 EN 61000-3-3 Applicable under the following conditions Load cables are less than 30 m. Other cables connected to the product are all less than 3 m.

*1 Does not apply to specially ordered or modified products. *2 Only on models that have the CE marking on the panel. *3 This product confirms to Class A. This product is intended for use in an industrial environment. This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts. *4 This is a Group 1 instrument. This product does not generate and/or use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/anal-ysis purpose. *5 This product confirms to Class I. Be sure to ground the protective conductor terminal of this product. If not grounded properly, safety is not guaranteed. *6 Pollution is addition of foreign matter (solid, liquid or gaseous) that may produce a reduction of dielectric strength or surface resistivity. Pollution Degree 2 assumes that only non-conductive pollution will occur except for an occasional temporary conductivity caused by condensation

High-performance Multifunctional AC Power Supplies

PCR-LE Series

LAN OPTION USB OPTION GPIB OPTION RS232C DRIVERS CE LXI



New stage of AC power supply supporting new energy field

The PCR-LE Series is a new line of advanced multifunctional AC power supply that has been developed from the former PCR-L/LA Series (linear amplifier type).
The PCR-LE Series provides high reliability and to support various applications, by taking advantage of the features that can control broadband waveform freely. Moreover, the PCR-LE Series can be configured as a core device of a test system combined with Electonic Loads and Power Analyzers for "Grid Connection Testing" in regard to dispersed power generation, such as Solar Power, Wind Power, Fuel Cell, and Gas Engine referred to as "New Energy Field". With various options, the low frequency immunity test and various power environment tests are supported. The options for parallel operation and three-phase operation enable you to expand a single-phase system up to 27 kVA, single-phase three wires system up to 54 kVA, and a three-phase system up to 81 kVA. The system can be applied to a large-scale EMC site for testing of industrial high-capacity air conditioners.

Dimensions / Weight

PCR500LE : 430(16.93″)W X 173(6.81″)H X 550(21.65″)Dmm / 17kg(37.48 lbs)
PCR1000LE: 430(16.93″)W X 262(10.31″)H X 550(21.65″)Dmm / 35kg(77.16 lbs)
PCR2000LE: 430(16.93″)W X 389(15.31″)H X 550(21.65″)Dmm / 55kg(121.25 lbs)
PCR3000LE: 430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm / 82kg(180.78 lbs)
PCR4000LE: 430(16.93″)W X 690(27.17″)H X 550(21.65″)Dmm / 96kg(211.64 lbs)
PCR6000LE: 430(16.93″)W X 944(37.17″)H X 550(21.65″)Dmm/140kg(308.65 lbs)
PCR9000LE: 430(16.93″)W X 1325(52.17″)H X 550(21.65″)Dmm /190kg(418.88 lbs)

Accessories

Setup Guide, Quick Reference (1 each for English and Japanese), CD-R(Contains the User's Manual and the Communication Interface Manual), Safety information
PCR500LE : Power cord (with plug, length: 3 m)

[NOTICE] To users of the PCR-L/LA Series

The PCR-LE Series is not compatible with the previous product, the PCR-L/LA Series. Consequently, it is not possible to upgrade a system if it includes a prior PCR-L/LA Series in the system. Further, along with this, in principle options cannot be used, with some exceptions. Please be considered of this notice for your planning of future system.
If you have any other questions, please contact our sales department for details.

Features

- High-quality/high-stability output with a high-speed linear amp
- Capable of various power line abnormality simulations and the sequence operation
- Single phase 500 VA to 9 kVA, supporting the system for the single-phase, and expandable with optional drivers for the single-phase three-wire, and three-phase operation
- Expandable capacity up to 27 kVA (single-phase), 54 kVA (single-phase three-wires), and 81 kVA (three-phase)
- Equipped with various measuring functions
- Features a full range of measuring functions and supports AC, DC, and AC + DC Outputs
- Detachable front panel
- Eco-friendly function equipped

Functions

● Wide range of output. DC output is also supported.

Item	Range
Voltage (AC) *1	1 V to 150 V (L range), 2 V to 300 V (H range)
Frequency	1 Hz to 999.9 Hz *2
Voltage (DC/AC+DC) *1	±1.4 V to ±212 V (L range), ±2.8 V to ±424 V (H range)

*1 : Settings available from 0 V.
*2 : The frequency is limited to the range from 1 Hz to 500.0 Hz when the 3P05-PCR-LE (500 Hz LMT) is installed in the PCR-LE series.

In addition, the system supports a DC output mode and AC + DC output mode. The system can be useful in a wider range of fields such as chemistry- and physics-related areas.

● Selectable response mode

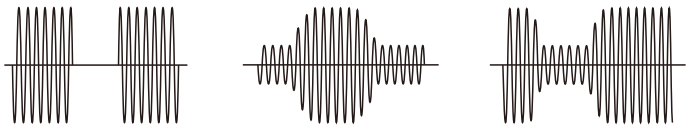
Allows to select a response mode for the internal amplifier system depending on the load condition and application.

Item	Application
High-speed response (FAST) *3	for requesting a rate of power rise/fall
Normal response (MEDIUM)	for testing various power supply environments
Highly stable response (SLOW)	for power supply for EMC testing sites

*3 : Excluding PCR6000LE, PCR9000LE, PCR6000LE2, PCR9000LE2, three phase operation, single phase 3-wire operation and parallel operation

● Power line abnormality simulation

In AC mode, it is possible to simulate the power line abnormalities by setting the output of the PCR-LE series system to the state of a power outage, voltage drop (dip), or voltage increase (pop). This allows the ability to test switching power supplies and electronic equipments.



power outage　voltage increase (pop)　voltage drop (dip)

● Various measuring functions

Output voltage/current RMS values, peak voltage/current, effective power/apparent power, average voltage/current, and power factor can be measured.
It is possible to analyze harmonics (up to 40 th order) of the output current.

PCR-LE/LE2 Series Options

■ Interface
IB05-PCR-LE (GPIB)
LN05-PCR-LE (LAN/LXI)
EX06-PCR-LE (Analog)*2
US05-PCR-LE (USB)
EX05-PCR-LE (Analog)*1

■ Extension cable for control panel(2 m)
EC05-PCR

■ Sequence creation software
SD011-PCR-LE(Wavy for PCR-LE)

■ Software for avionics norms
SD012-PCR-LE

PCR-LE Series Options

■ Input power cable
AC5.5-3P3M-M4C(For PCR1000LE)
AC8-1P3M-M5C-3S(For PCR2000LE)
AC14-1P3M-M8C-3S
(For PCR3000LE/PCR6000LE(1P2W input))
AC22-1P3M-M8C-3S(For PCR4000LE)
AC14-1P3M-M5C-4S
(For PCR6000LE(3P3W input)/PCR9000LE(3P3W input))
AC5.5-1P3M-M5C-5S
(For PCR6000LE(3P4W input)/PCR9000LE(3P4W input))

■ Extension cable for PD05S-PCR-LE
PC01-PCR-LE(130 cm)
(For parallel operation)

■ Connecting cable (for 2P05,3P05)
CC01-PCR-LE (150 cm)
CC02-PCR-LE (280 cm)

■ Power signal cable
CC11-PCR-LE(100 cm)(for parallel operation)

■ Parallel operation driver*3
PD05M-PCR-LE
(For master unit operated in parallel)
PD05S-PCR-LE
(For slave unit operated in parallel)

■ Three-phase output driver
3P05-PCR-LE
3P05-PCR-LE (500 Hz LMT)

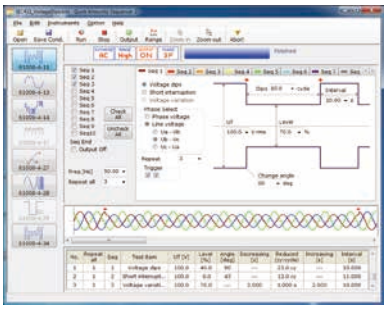
■ Single-phase
Three-wire Output Driver
2P05-PCR-LE

■ Power linkage cable (1 m)
LC01-PCR-LE

■ Quick immunity sequencer
SD009-PCR-LE

"Quick Immunity Sequencer 2" (model name: SD009-PCR-LE)is an application software for immunity testing with the AC power supply PCR-LE series system, based on the power line disturbance standard (IEC61000-4 Series) for the immunity testing of the EMC standard.
Not only can it be used for compliance testing based on the latest standards or for some types of preliminary testing, but the software can be also employed for advance checking in development phases and for immunity margin tests, because it allows extended testing conditions to be set as needed.

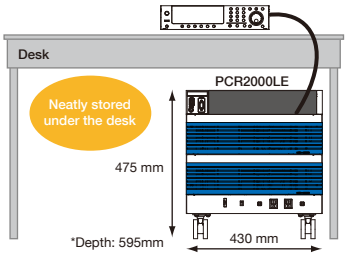
The latest standards for IEC61000-4 supported!



● Front panel serving as a remote control

The front panel is detachable. With the optional extension cable, the panel functions as a remote control.
You can operate the PCR-LE unit installed under your work desk/work bench remotely from the front panel connected with the optional extension cable (EC05-PCR).

[Practical example]



*1 The input waveform is directly amplified and output.
*2 The voltage of the output alternating current can be changed based on the level input DC signal.
*3 PCR500LE and PCR1000LE and PCR6000LE2 and PCR9000LE2 can not be operated in parallel.

PCR-LE Series Specifications

Item/Model		PCR500LE	PCR1000LE	PCR2000LE	PCR3000LE	PCR4000LE	PCR6000LE			PCR9000LE	
Input ratings (AC rms)		1P2W						3P3W 200V	3P4W 400V	3P3W 200V	3P4W 400V
Voltage		85 V to 132 V/170 V to 250 V *1					170 V to 250 V		Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)	170 V to 250 V	Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)
Phases		Single phase						Three phase 3-wires	Three phase 4-wires	Three phase 3-wires	Three phase 4-wires
Frequency		47 Hz to 63 Hz									
Apparent power		Approx. 0.93 kVA	Approx. 1.8 kVA	Approx. 3.6 kVA	Approx. 5.5 kVA	Approx. 7.3 kVA	Approx. 10.6 kVA			Approx. 15.7 kVA	
Power factor *2		0.97 (TYP)									
Max. current *1		11.3 A, 5.5 A	22 A, 10.8 A	44 A, 21.5 A	66 A, 32 A	88 A, 43 A	64 A	38 A	21 A	55 A	30 A
AC mode output ratings (AC rms)											
Voltage (output L range, output H range)*3		1 V to 150 V / 2 V to 300 V									
	Resolution	0.1V									
Voltage setting range		0 V to 152.5 V / 0 V to 305.0 V									
Voltage setting accuracy (output L range, output H range) *4		± (0.3 % of set + 0.6V)									
Max. current (output L range, output H range) *5		5 A, 2.5 A	10 A, 5 A	20 A, 10 A	30 A, 15 A	40 A, 20 A	60 A, 30 A			90 A, 45 A	
Phase		Single phase									
Power capacity		500 VA	1 kVA	2 kVA	3 kVA	4 kVA	6 kVA			9 kVA	
Maximum peak current *6		Max. current (rms) × 4 (TYP)									
Max. reverse current *7		30 % of the max. current (rms)									
Load power factor		0 to 1 (leading or lagging) *5									
Frequency *5		1 Hz to 999.9 Hz									
	Resolution	0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 999.9 Hz)									
DC mode output ratings											
Voltage (output L range, output H range)*3		±1.4 V to ±212 V/±2.8 V to ±424 V									
	Resolution	0.1 V									
Voltage setting range		-215.5 V to +215.5 V / -431.0 V to +431.0 V									
Voltage setting accuracy (output L range, output H range) *8		±(0.05 % of set + 0.05/0.1 V)									
Max. current (output L range, output H range) *9		3.5 A, 1.75 A	7 A, 3.5 A	14 A, 7 A	21 A, 10.5 A	28 A, 14 A	42 A, 21 A			63 A, 31.5 A	
Max. instantaneous current *10		Max. current (rms) × 3.6									
Power capacity		350 W	700 W	1.4 kW	2.1 kW	2.8 kW	4.2 kW			6.3 kW	
Output voltage stability											
Line regulation *11		Within ±0.1 %									
Load regulation (output L range, output H range)*12		Within ±0.1 V, within ±0.2 V									
Output frequency variation *13	FAST	Within ±0.2 %					–				
	MEDIUM	Within ±0.3 %									
Ripple noise in DC mode (5 Hz to 1 MHz components)		0.15 Vrms or less			0.2 Vrms or less		0.25 Vrms or less				
Ambient temperature variation *14		100 ppm/°C (TYP)									
Output frequency stability, output voltage waveform distortion ratio, output voltage response speed, efficiency											
Output frequency stability *15		Within $\pm 5\times10^{-5}$									
	Setting accuracy	$\pm 1\times10^{-4}$									
Output voltage waveform distortion ratio *16	FAST	±0.2 % or less					–				
	MEDIUM	±0.3 % or less									
Output voltage response speed *17	FAST	20 µs (TYP)					–				
	MEDIUM	30 µs (TYP)									
Efficiency *18		54 % or more, 56 % or more	55 % or more, 57 % or more				58 % or more				
Meters (fluorescent display)											
Voltmeter *19	Resolution	0.1V									
	Accuracy	± (1 % of rdng + 2 digits) (10 V to 424 V and at room temperature)									
Ammeter *19	Resolution	0.01 A			0.1 A						
	Accuracy	± (1 % of rdng + 2 digits) (5 % of the max. rated current to max. rated current and at room temperature)									
Wattmeter *20	Resolution	0.1 W/1 W			1 W						
	Accuracy	± (1 % of rdng +3 digits) (10 % of the rated power capacity to the rated power capacity, when the load power factor is 1, and at room temperature.)									
BNC terminals											
SEQ TRIG OUT *21		Pulse width approx. 10µs, open collector output, pullup at +5 V and approx. 10 kΩ serial resistance approx. 220 Ω, maximum sink current 10 mA, BNC connector									
SEQ STAT OUT *21		Step time output, open collector output, pullup at +5 V and approx. 10 kΩ serial resistance approx. 220 Ω, maximum sink current 10 mA, BNC connector									
SEQ TRIG IN *21		Operating pulse width 10µs or greater, photo-coupler input, driving voltage 5 V, serial resistance approx. 470 Ω, active with 7 mA source, BNC connector									

*1 100 V input type or 200 V input type
*2 When the input voltage is 100 V or 200 V, the output voltage is 100 V or 200 V, the output current is the rated value, the load power factor is 1, and the output frequency is between 40 Hz and 999.9 Hz.
*3 L/H range can be changed by means of a switch on the front panel.
*4 When the output frequency is between 45 Hz and 65 Hz, with no load, and at room temperature.
*5 When the maximum voltage is between 1 V and 100 V (L range) or 2 V and 200 V (H range) and the load power factor is between 0.8 and 1.
When the output voltage is between 100 V and 150 V (L range) or 200 V and 300 V (H range), the output current is reduced by the output voltage.
When the load power factor is between 0 and 0.8, the output current is reduced by the load power factor.
When the output frequency is between 1 Hz and 40 Hz, the output current is reduced by the output frequency.
*6 For capacitor-input rectifier loads (however, this is limited by the rated output current's rms value).
*7 When the output voltage is 100 V or 200 V and the output frequency is between 40 Hz and 999.9 Hz (reverse current is -180 deg out of phase with the output voltage).
*8 With no load at room temperature
*9 When the output voltage is between 100 V and 212 V (L range) or 200 V and 424 V (H range), the output current is reduced by the output voltage.
*10 Limited by the rated output current's rms value
*11 With respect to changes in the rated range
*12 With respect to 0 % to 100 % changes in the rating
When the output voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. At the output terminal block. When the response mode is set to FAST or MEDIUM.
*13 Between 40 Hz and 999.9 Hz.
When the output voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. This is the output line regulation with 200 Hz as the reference.
*14 With respect to changes in the rated range
When the output voltage range is 100 V or 200 V and the output current is 0 A.
*15 With respect to changes in all rated ranges
*16 When the output voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1.
*17 When the output voltage is 100 V or 200 V, the load power factor is 1, and the output current changes from 0 A to the rated value and from the rated value to 0 A.
*18 When the input voltage is 100 V or 200 V, the output voltage is 100 V or 200 V, the output current is the rated value, the load power factor is 1, and the output frequency is between 40 Hz and 999.9 Hz.
*19 With the true rms display, a waveform with a crest factor of 3 or less, DC, output frequency between 40 Hz and 999.9 Hz, RMS, and AVE.
*20 When the output frequency is between 45 Hz and 65 Hz.
*21 Although signals are insulated with output terminals, each signal is common. Logic setting is also possible.

PCR-LE Series Specifications

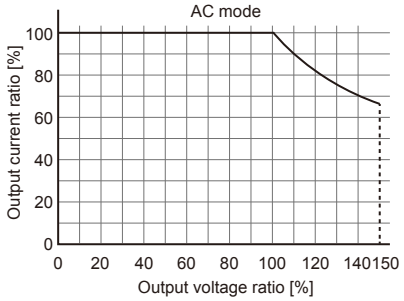
Item/Model		PCR500LE	PCR1000LE	PCR2000LE	PCR3000LE	PCR4000LE	PCR6000LE			PCR9000LE	
General		1P2W					3P3W 200V	3P4W 400V		3P3W 200V	3P4W 400V
Insulation resistance	Between input and chassis, output and chassis, and input and output	500 Vdc, 30 MΩ or more			500 Vdc, 10 MΩ or more						
Withstand voltage	Between input and chassis, output and chassis, and input and output	1.5 kVAC for 1 minute									
Circuit method		Linear amplifier system									
Environmental conditions	Operating environment	Indoor use, overvoltage category II									
	Operating temperature range	0 °C to +50 °C									
	Storage temperature range	-10 °C to +60 °C									
	Operating humidity range	20 % rh to 80 % rh (no condensation)									
	Storage humidity range	90 % rh or less (no condensation)									
	Altitude	Up to 2000 m									
Weight		Approx.17 kg (37.48 lbs)	Approx. 35 kg (77.16 lbs)	Approx. 55 kg (121.25 lbs)	Approx. 82 kg (180.78 lbs)	Approx. 96 kg (211.64 lbs)	Approx. 140 kg (308.65 lbs)			Approx. 190 kg (418.88 lbs)	
Input terminal		Inlet	M4	M5	M8	M8	M8	M5	M5	M5	M5
Output terminal		M4	M4	M4	M5	M5	M8	M8	M8	M8	M8
Accessories	Power cord	1 pc. With plug Length: 3 m	–								
	Setup guide	1 copy									
	CD-ROM (User's manual)	1 disc									
	Quick Reference	1 each for English and Japanese									
	Safety information	1 copy									
Electromagnetic compatibility (EMC) *1, 2		Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN 61326-1 (Class A *3), EN 55011 (Class A *3, Group 1 *4), EN 61000-3-2 *5, EN61000-3-3 *5 The maximum length of all cables and wires connected to the PCR-LE Series must be less than 3 m.									
Safety		Complies with the requirements of the following directive and standard. Low Voltage Directive 2014/35/EU *2 EN 61010-1 Class I *6, Pollution Degree 2									

*1 Does not apply to specially ordered or modified PCR-LEs.
*2 Only on models that have the CE marking on the panel.
*3 This is a Class A equipment. This product is intended for use in an industrial environment. This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.
*4 This is a Group 1 equipment. This product does not generate and/or use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose.
*5 Excluding PCR3000LE, PCR4000LE, PCR6000LE and PCR9000LE.
*6 This is a Class I equipment. Be sure to ground this product's protective conductor terminal. The safety of this product is only guaranteed when the product is properly grounded.

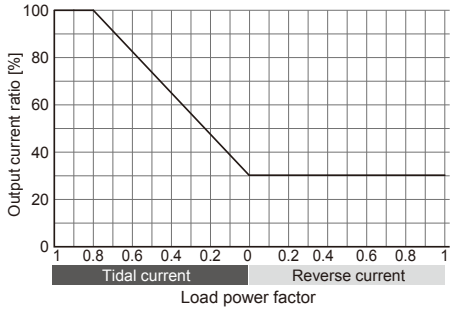
■ Output voltage ratio versus rated output current characteristics

The output voltage ratio is a percentage where 100 % represents an output voltage of 100 V (output L range) or 200 V (output H range) in AC mode or DC mode.
The output current ratio is a percentage where 100 % represents the maximum rated output current in AC mode or DC mode.

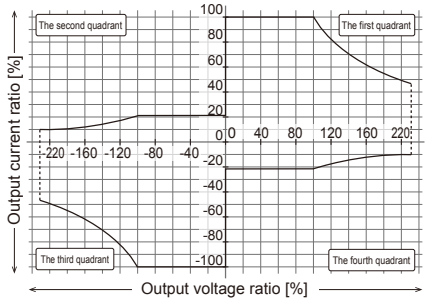
■ Output voltage ratio versus rated output current characteristics (AC mode)



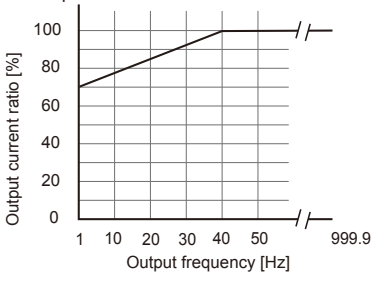
■ Load power factor versus rated output current characteristics



■ Output voltage ratio versus rated output current characteristics (DC mode)



■ Output frequency versus rated output current characteristics



For the "Output voltage ratio versus rated output current characteristics (AC mode)" and "Load power factor versus rated output current characteristics" graphs, the rated output current is the product of the output current ratios shown in both graphs. The output current ratio shown in the "Output frequency versus rated output current characteristics" graph is given priority if it is less than the product of the output current ratios described above. (This only applies to AC mode.)

High-performance Multifunctional AC Power Supplies

PCR-LE2 Series

LAN OPTION USB OPTION GPIB OPTION RS232C DRIVERS CE LXI

PCR6000LE2 PCR9000LE2

Capable of single-phase, single-phase three-wire,and three-phase output with a single unit. Convenient multiple output supports a versatile range of industrial devices.

The PCR-LE2 Series are designed based on the PCR-LE Series which can switch between single-phase output, single-phase three-wire output, and three-phase output by a switching from the front panel operation. It contains the same basic features and performance of the PCR-LE Series, and uses the same power unit as the PCR-LE Series. Use of this series is much easier than installing individual single-phase, single-phase three-wire, and three-phase systems, and allows more effective use of space. The PCR-LE2 Series 2 models: 6 kVA, and 9 kVA.

Dimensions / Weight

PCR6000LE2: 430(16.93″)W × 944(37.17″)H × 550(21.65″)Dmm / 140kg(308.65 lbs)
PCR9000LE2: 430(16.93″)W × 1325(52.17″)H × 550(21.65″)Dmm / 190kg(418.88 lbs)

Features

- High-quality/high-stability output with a high-speed linear amp
- Capable of various power line abnormality simulations and the sequence operation
- Single-phase 6 kVA to 9 kVA, Capable of the Single-phase output, Single-phase 3-wire output, and Three-phase output.
- Equipped with various measuring functions
- Features a full range of measuring functions and supports AC, DC, and AC + DC Outputs
- Detachable front panel
- Eco-friendly function equipped

Accessories

Setup Guide, Quick Reference (1 each for English and Japanese), CD-R(Contains the User's Manual and the Communication Interface Manual), Safety information

Options

■ Input power cable

AC5.5-1P3M-M5C-5S
(For PCR6000LE2(3P4W input)/PCR9000LE2(3P4W input))

AC14-1P3M-M8C-3S(For PCR6000LE2(1P2W input))

AC14-1P3M-M5C-4S
(For PCR6000LE2(3P3W input)/PCR9000LE2(3P3W input))

■ Other options

- Please refer to PCR-LE/LE option section at previous page.
- Fixing PCR6000LE2/PCR9000LE2 to the floor by L-shaped brackets is required.

PCR-LE2 Series Specifications

Item/Model			PCR6000LE2			PCR9000LE2	
Input ratings (AC rms)			1P2W	3P3W 200V	3P4W 400V	3P3W 200V	3P4W 400V
Voltage			Line voltage 170 V to 250 V		Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)	Line voltage 170V to 250V	Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)
Phases			Single phase	Three phase 3-wire	Three phase 4-wire	Three phase 3-wire	Three phase 4-wire
Frequency			47 Hz to 63 Hz				
Apparent power			Approx. 10.6 kVA			Approx. 15.7 kVA	
Power factor *1			0.97 (TYP)				
Max. current			64 A or less	38 A or less	21 A or less	55 A or less	30 A or less
AC mode output ratings (AC rms)							
Voltage (output L range, output H range) *2			1 V to 150 V, 2 V to 300 V				
Voltage setting range			0 V to 152.5 V / 0 V to 305.0 V				
Voltage setting accuracy (output L range, output H range) *3			±(0.3 % of set + 0.6 V)				
Max. current *4	Single phase, poly phase, L range, H range		60 A, 30 A · 20 A, 10 A			90 A, 45 A · 30 A, 15 A	
Phase *5			Single phase · Single phase 3-wire · Three-phase 4-wire				
Power capacity	Single phase, Three-phase 4-wire, Single phase 3-wire		6 kVA · 4 kVA			9 kVA · 6 kVA	
Maximum peak current *6			Max. current (rms) × 4 (TYP)				
Max. reverse current *7			30 % of the max. current (rms)				
Load power factor *4			0 to 1 (leading or lagging)				
Frequency *4 *8			1 Hz to 999.9 Hz ★				
DC mode output ratings (for Single-phase and Single-phase Three-wire output only)							
Voltage (output L range, output H range) *2			±1.4 V to ±212 V/±2.8 V to ±424 V				
Voltage setting range			-215.5 V to +215.5 V / -431.0 V to +431.0 V				
Voltage setting accuracy (output L range, output H range) *9			± (0.05% of set + 0.05V/0.1V)				
Max. current *4	Single phase, poly phase, L range, H range		42 A, 21 A · 14 A, 7 A			63 A, 31.5 A · 21 A, 10.5 A	
Max. instantaneous current *10			Max. current (rms) × 3.6				
Power capacity	Single phase, Single phase 3-wire		4.2 kW · 2.8 kW			6.3 kW · 4.2 kW	
Output voltage stability							
Line regulation(With respect to changes in the rated range)			Within ±0.1 %				
Load regulation(With respect to 0 % to 100 % changes in the rating) *11			±0.3 V				
Output frequency variation in AC mode(Between 40 Hz and 999.9 Hz) *12			Within ±0.5 %				
Ripple noise in DC mode(5 Hz to 1 MHz components)			0.25 Vrms or less				
Ambient temperature variation(With respect to changes in the rated range) *13			100 ppm/ °C (TYP)				
Output frequency stability, output voltage waveform distortion ratio, output voltage response speed, efficiency							
Output frequency stability(With respect to changes in all rated ranges)			Within $\pm5\times10^{-5}$, Setting accuracy : Within $\pm1\times10^{-4}$				
Output voltage waveform distortion ratio *14			0.3 % or less				
Output voltage response speed *15			30 µs (TYP)				
Efficiency *1			58 % or more				
Phase difference of the output phase voltage *16	Accuracy		Within $\pm(0.4°+fo\times1.8\times10^{-3}°)$, where the output frequency is fo. *17				
Meters (fluorescent display)							
Voltmeter *18 *19	Resolution	RMS,AVE Display mode	0.1 V				
	Accuracy	RMS,AVE Display mode	Within ± (1 % of rdng + 2 digits) (10 V to 848 V and at room temperature)				
Ammeter *18 *19	Resolution	RMS,AVE Display mode Single phase · Poly phase	0.1 A · 0.01 A			0.1 A	
	Accuracy	RMS Display mode	Within ± (1% of reading + 2digits) (5 % of the max. rated current to max. rated current and at room temperature)				
Wattmeter *19	Resolution	Single phase · Poly phase	1 W · 0.1 W/1 W			1 W	
	Accuracy		Within ± (1% of reading + 3digits) (10 % of the rated power capacity to the rated power capacity, when the load power factor is 1, and at room temperature.)				
Frequency meter *20	Resolution		0.01 Hz/0.1 Hz				
General							
Insulation resistance	Between input and chassis, output and chassis, and input and output		500 V, 10 MΩ or more				
Withstand voltage			1.5 kVAC for 1 minute				
Circuit method			Linear amplifier system				
Environmental conditions	Operating temperature range / Storage temperature range		0 °C to +50 °C / -10 °C to +60 °C				
	Operating humidity range / Storage humidity range		20 % rh to 80 % rh (no condensation) / 90 % rh or less (no condensation)				
Weight			Approx.140 kg (308.65 lbs)			Approx.190 kg (418.88 lbs)	
Input terminal	Input terminal board [3φ]		M8	M5		M5	
Output terminal	Output terminal board Single phase · Single phase 3-wire,Three-phase 4-wire		M8 · M5				
Input power cord [Sold separately option]	Shape		Single-core cable				
	The number		3 pc	4 pc	5 pc	4 pc	5 pc
	Conductor cross section/Length		14 mm^2/3 m	8 mm^2/3m	5.5 mm^2/3 m	14 mm^2/3 m	5.5 mm^2/3 m
Accessories	User's manual (Setup guide)		1 copy				
	CD-ROM (User's manual)		1 disc				
	Quick Reference		1 each for English and Japanese				
	Safety information		1 copy				
Other	Electromagnetic compatibility (EMC)		EMC Directive 2014/30/EU. EN61326-1. The maximum length of all cables and wires connected to the PCR-LE Series must be less than 3 m.				
	Safety		Low Voltage Directive 2014/35/EU, EN61010-1Class I Pollution Degree2				
	Output voltage ratio versus rated output current characteristics		Same as PCR-LE series. (Refer to P 53)				

*1 When the output phase voltage is 100 V or 200 V, the output current is the rated value, the load power factor is 1, and the output frequency is between 40 Hz and 999.9 Hz.
*2 L/H range can be changed by means of a switch on the front panel. Resolution: 0.1V
*3 When the output frequency is between 45 Hz and 65 Hz, with no load, and at room temperature.
*4 When the maximum voltage is between 1 V and 100 V (L range) or 2 V and 200 V (H range) and the load power factor is between 0.8 and 1.When the output phase voltage is between 100 V and 150 V or 200 V and 300 V (AC mode) or 100 V and 212 V or 200 V and 424 V (DC mode), the output current is reduced by the output phase voltage. When the load power factor is between 0 and 0.8, the output current is reduced by the load power factor. (AC mode) When the output frequency is between 1 Hz and 40 Hz, the output current is reduced by the output frequency.(AC mode)
*5 The output phase mode can be changed by means of a key on the operation panel. "Multi-phase" in the table indicates single-phase three-wire mode and three-phase four-wire mode.
*6 When the output phase voltage is in the vicinity of the peak (±15 deg) (However, this is limited by the rated output current's rms value).
*7 When the output phase voltage is 100 V or 200 V and the output frequency is between 40 Hz and 999.9 Hz (reverse current is −180 deg out of phase with the output voltage).
*8 Resolution : 0.01Hz (1.00Hz to 100.0Hz), 0.1Hz (100.0Hz to 999.9Hz)
*9 With no load at room temperature
*10 Limited by the rated output current's rms value
*11 When the output phase voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. At the output terminal block. When the response mode is set to MEDIUM.(There is no F mode)
*12 When the output phase voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. This is the output line regulation with 200 Hz as the reference. When the response mode is set to MEDIUM.(There is no F mode)
*13 When the output phase voltage is 100 V or 200 V and the output current is 0 A.
*14 When the output phase voltage is between 80 V and 150 V (L range) or 160 V and 300 V (H range) and the load power factor is 1. When the response mode is set to MEDIUM.(There is no F mode)
*15 When the output phase voltage is 100 V or 200 V, the load power factor is 1, and the output current changes from 0 A to the rated value and from the rated value to 0 A.
*16 Phase difference between output voltages (phase voltages) when each phase is considered along with the neutral point.
*17 The following show the angles obtained by calculating the expression with the specified frequency.
Within ±0.5° (when generating 60 Hz output)
Within ±1.2° (when generating 400 Hz output)
*18 With the true rms display, a waveform with a crest factor of 3 or less.
*19 When the output frequency is between 45 Hz and 65 Hz.
*20 Displays the output frequency setting (frequency of the internal reference voltage).

★ PCR-LE2 Series 500Hz Limit Model
The PCR-LE Series offers the type on each model that limits the maximum output frequency to 500 Hz.