

The never-ending evolution of power supplies!



Ultra-Compact AC/DC Programmable Power Supply

PCR-WEA/WEA2 Series

NEW

- Compact size: 6 kVA in 6U size (PCR6000WEA2)
- Up to 36 kVA in one single unit
- 100% regenerative capability (for "R" models, PCR-WEA2R)
- Mix-and-match parallel operation up to 144 kVA
- Flexible digital interface: LAN (LXI), USB, RS232C, GPIB (factory option)
- Power line disturbance simulation
- Power-saving function
- DC output (100% of rated power)
- Output frequency up to 5 kHz
- Output rating: AC 0 to 320 Vrms, DC 0 to ± 452 V

THE EVOLUTION

More power, more speed, more freedom! While maintaining the high-power density of 6 kVA/6U and 36 kVA in a single housing unit, the maximum output voltage, response characteristics, and load stability have been improved!

Ultra-Compact AC/DC Programmable Power Supply PCR-WEA/WEA2 Series

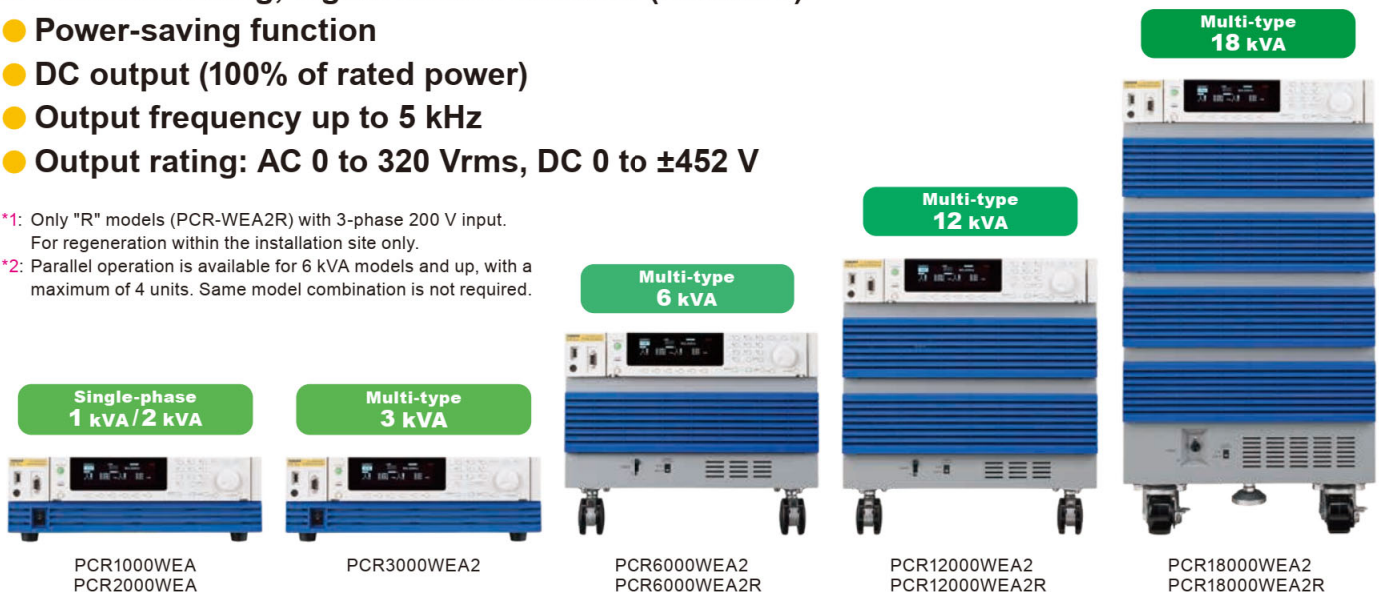
The PCR-WEA/WEA2 is a series of multifunctional switching AC power supplies that combines accurate, high-power output with an ultra-compact design. The 15 model line-up ranges from 1 kVA to 36 kVA AC/DC with single & 3-phase variable output from 6 kVA and up. The PCR-WEA2 also features a regenerative mode^{*1} that can drastically reduce power consumption and cut operating costs.

The PCR-WEA2/WEA2R also supports mix-and-match parallel operation^{*2} up to 144 kVA for large-scale test systems. Output frequency up to 5 kHz is also available with all models, which is critical for AC applications in avionic industries.

- Compact size: 6 kVA in 6U frame (PCR6000WEA2)
- Up to 36 kVA in a single unit (PCR36000WEA2)
- 100% regenerative-power capability^{*1}
- Mix-and-match parallel operation up to 144 kVA
- Flexible digital interface:
LAN (LXI), USB, RS232C, GPIB (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 320 Vrms, DC 0 to ± 452 V

^{*1}: Only "R" models (PCR-WEA2R) with 3-phase 200 V input.
For regeneration within the installation site only.

^{*2}: Parallel operation is available for 6 kVA models and up, with a maximum of 4 units. Same model combination is not required.



● Lineup

Specifications		AC mode output rating				DC mode output rating			Input rating (AC rms)							
Model	Phase	Power capacity	Phase voltage	Max. current *1 (L/H range)	Frequency	Power capacity	Voltage	Max. current *2 (L/H range)	Phase	Voltage (nominal)	Apparent power	Current				
		VA	V	A	Hz	W	V	A		V	kVA or less	A or less				
PCR1000WEA	Single-phase	1 k	(The spec guaranteed voltage range) 1 to 160/ 2 to 320 (L/H output range) (Voltage setting range) 0 to 161.0/ 0 to 322.0	10/5	1 to 5000	1 k	(The spec guaranteed voltage range) ±1.4 to ±226/ ±2.8 to ±452 (L/H output range) (Voltage setting range) -227.5 to +227.5/ -455.0 to +455.0	10/5	Single-phase	100 to 120, 200 to 240	1.4	17/8.5				
PCR2000WEA	Single-phase	2 k		20/10		2 k		20/10	Single-phase	100 to 120, 200 to 240	2.7	32/16				
PCR3000WEA2	Single-phase	3 k		30/15		3 k		30/15	Single-phase	100 to 120, 200 to 240	4	48/24				
	Three-phase	3 k		10/5												
PCR6000WEA2R	Single-phase	6 k		60/30		6 k		60/30	Three-phase Three-wire	Line voltage 200 to 240	7.8	27				
	Three-phase	6 k		20/10												
PCR6000WEA2	Single-phase Three-wire	4 k		120/60		12 k		120/60	Three-phase Three-wire	Line voltage 200 to 240	15.6	53				
	Three-phase	12 k		40/20												
PCR12000WEA2R	Single-phase	12 k		180/90		18 k		180/90	Three-phase Three-wire	Line voltage 200 to 240	23.4	80				
PCR12000WEA2	Single-phase Three-wire	8 k		60/30									24 k		240/120	Three-phase Three-wire
	Three-phase	18 k		80/40												
PCR18000WEA2R	Single-phase	18 k		300/150		30 k		300/150	Three-phase Three-wire	Line voltage 200 to 240	39	133				
	Three-phase	24 k		100/50												
PCR24000WEA2R	Single-phase	24 k		360/180		36 k		360/180	Three-phase Three-wire	Line voltage 200 to 240	46.8	159				
	Three-phase	30 k		120/60												
PCR24000WEA2	Single-phase Three-wire	16 k		(The spec guaranteed voltage range) 1 to 160/ 2 to 320 (L/H output range) (Voltage setting range) 0 to 161.0/ 0 to 322.0		10/5		1 to 5000	1 k	(The spec guaranteed voltage range) ±1.4 to ±226/ ±2.8 to ±452 (L/H output range) (Voltage setting range) -227.5 to +227.5/ -455.0 to +455.0	10/5	Single-phase	100 to 120, 200 to 240	1.4	17/8.5	
	Three-phase	2 k				20/10			2 k		20/10	Single-phase	100 to 120, 200 to 240	2.7	32/16	
PCR30000WEA2R	Single-phase	3 k				30/15			3 k		30/15	Single-phase	100 to 120, 200 to 240	4	48/24	
	Three-phase	3 k				10/5										
PCR30000WEA2	Single-phase	6 k				60/30			6 k		60/30	Three-phase Three-wire	Line voltage 200 to 240	7.8	27	
	Three-phase	6 k	20/10													
PCR36000WEA2R	Single-phase	12 k	120/60		12 k		120/60		Three-phase Three-wire		Line voltage 200 to 240	15.6	53			
	Three-phase	12 k	40/20													
PCR36000WEA2	Single-phase	18 k	180/90		18 k		180/90		Three-phase Three-wire		Line voltage 200 to 240	23.4	80			
	Three-phase	18 k	60/30													
PCR36000WEA2	Single-phase	24 k	240/120		24 k		240/120		Three-phase Three-wire		Line voltage 200 to 240	31.2	106			
	Three-phase	24 k	80/40													
PCR36000WEA2	Single-phase	30 k	300/150		30 k		300/150		Three-phase Three-wire		Line voltage 200 to 240	39	133			
	Three-phase	30 k	100/50													
PCR36000WEA2	Single-phase	36 k	360/180		36 k		360/180		Three-phase Three-wire		Line voltage 200 to 240	46.8	159			
	Three-phase	36 k	120/60													

*1 When the output phase voltage is between 100 Vac and 160 Vac or 200 Vac and 320 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.

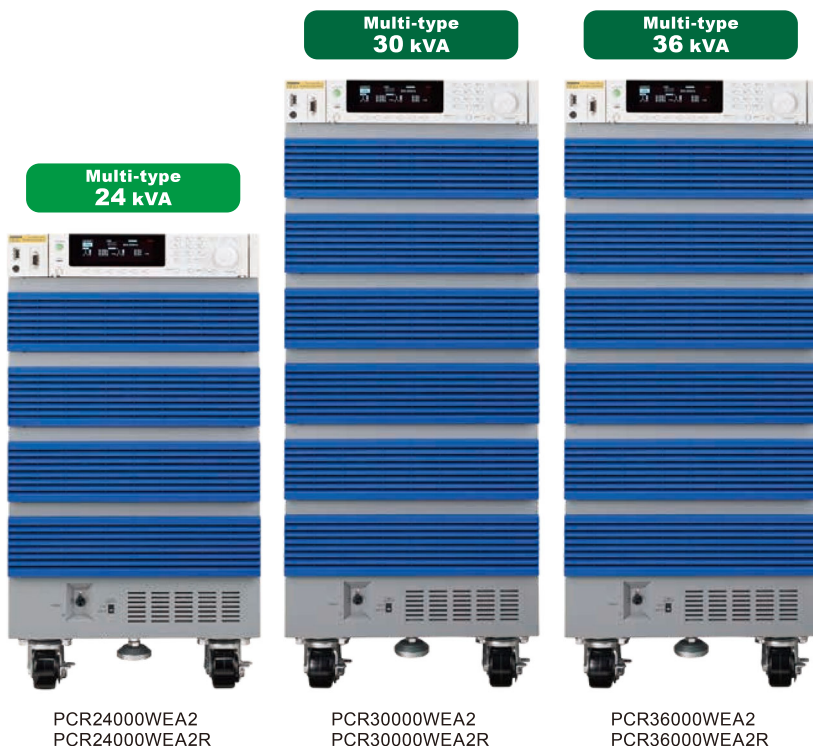
*2 When the output voltage is between 100 Vac and 226 Vac or 200 Vac and 452 Vac, the output current is reduced by the output voltage.

★ 500 Hz Limit Model is available. The PCR-WEA2 Series offers a limited frequency type with a maximum output frequency of 500 Hz.

● Dimensions/Weight

Model	Dimensions(mm(inch))(Maximum size)	Weight
PCR1000WEA	430(16.9")W×129.2(5.1")H×655(25.8")Dmm	16 kg(35.3 lb)
PCR2000WEA	430(16.9")W×129.2(5.1")H×655(25.8")Dmm	20 kg(44.1 lb)
PCR3000WEA2	430(16.9")W×129.2(5.1")H×655(25.8")Dmm	23 kg(50.7 lb)
PCR6000WEA2R	430(16.9")W×262(10.3")H×550(21.7")Dmm	42 kg(92.6 lb)
PCR6000WEA2	430(16.9")W×262(10.3")H×550(21.7")Dmm	43 kg(94.8 lb)
PCR12000WEA2R	430(16.9")W×389(15.3")H×550(21.7")Dmm	66 kg(145.5 lb)
PCR12000WEA2	430(16.9")W×389(15.3")H×550(21.7")Dmm	65 kg(143.3 lb)
PCR18000WEA2R	430(16.9")W×445(17.5")H×550(21.7")Dmm	120 kg(264.6 lb)
PCR18000WEA2	430(16.9")W×445(17.5")H×550(21.7")Dmm	120 kg(264.6 lb)

Model	Dimensions(mm(inch))(Maximum size)	Weight
PCR24000WEA2R	430(16.9")W×690(27.2")H×550(21.7")Dmm	130 kg(286.6 lb)
PCR24000WEA2	430(16.9")W×690(27.2")H×550(21.7")Dmm	130 kg(286.6 lb)
PCR30000WEA2R	430(16.9")W×944(37.2")H×550(21.7")Dmm	160 kg(352.7 lb)
PCR30000WEA2	430(16.9")W×944(37.2")H×550(21.7")Dmm	160 kg(352.7 lb)
PCR36000WEA2R	430(16.9")W×944(37.2")H×550(21.7")Dmm	180 kg(396.8 lb)
PCR36000WEA2	430(16.9")W×944(37.2")H×550(21.7")Dmm	170 kg(374.8 lb)



Features

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Performance

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Exterior Design

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Specifications

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Option/Cable

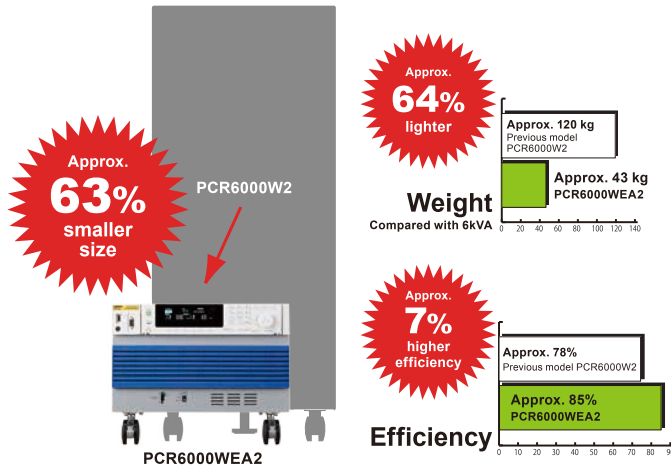
p8-p9, p18-p19

PWM Inverter Type - Programmable AC Power Supply

The PCR-WEA/WEA2 Series brings new innovations to the power-electronics industry.

Compact Size!

Compared to our previous PWM models, the size of the PCR-WEA has been drastically reduced by 60%. Efficiency has also been increased by approximately 7%, for an overall high efficiency of approximately 85%.



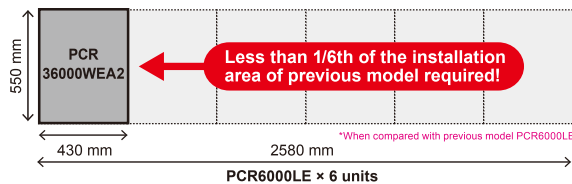
Extremely Power Dense 36 kVA Chassis

The PCR-WEA/WEA2 form factor has been significantly improved, occupying the absolute minimum amount of precious space in your testing facility.

The form factor is even further optimized in high power models.

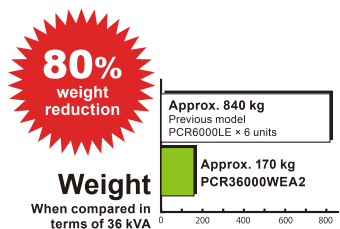
● Installation area comparison (36 kVA)

The PCR-WEA/WEA2 is only 1/6th the size of the PCR-LE!



● Weight comparison (36 kVA)

The PCR-WEA/WEA2 is approximately 80% lighter than the PCR-LE!



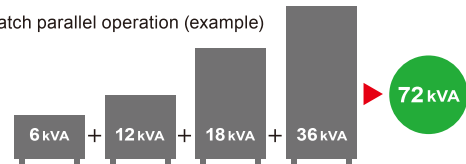
Up to 144 kVA with Parallel Operation

Parallel operation is available on all models by simply connecting an optional parallel operation cable. This feature is available even among different models for a wide range of high power.

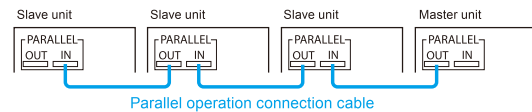
**Same input voltage required for 6 kVA models and higher.*



● Mix-and-match parallel operation (example)



● Connection diagram



Low Ripple Noise

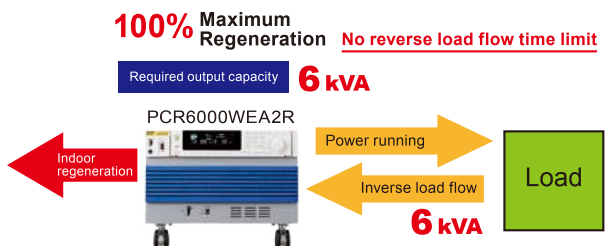
Achieves an extremely low switching noise for a PWM inverter-type AC power supply, with ripple noise as low as 0.25 Vrms.

The PCR-WEA series even boasts similar noise performance with the PCR-LE/LE2 linear amplifier power supply series. The compact, high-power design of the PCR-WEA/WEA2 has been achieved with absolutely no compromises to ripple noise performance.

100% Regeneration Capability, No Time Limit

The PCR-WEA2R models are capable of 100% power regeneration. The power regeneration feature is available with absolutely no reverse load flow time limit. (30% for PCR-LE/LE2)

**Regeneration is limited within installation site. Only available in "R" models (PCR-WEA2R) with 3-phase 200 V input.*



Output Frequency up to 5 kHz

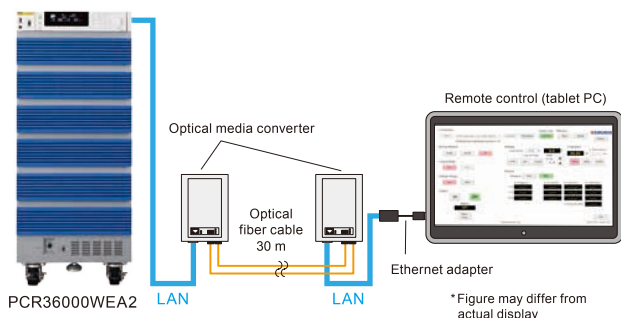
It has a maximum output frequency up to 5 kHz for critical applications in the defense and avionics industries. The frequency performance of the PCR-WEA allows for simulation of sharp voltage fluctuations required for airborne electronic equipment testing. Furthermore, the compact 6kVA/6U form factor allows for the easy preparation of an automated, one-rack testing system without requiring a costly, specialized power source installation space.



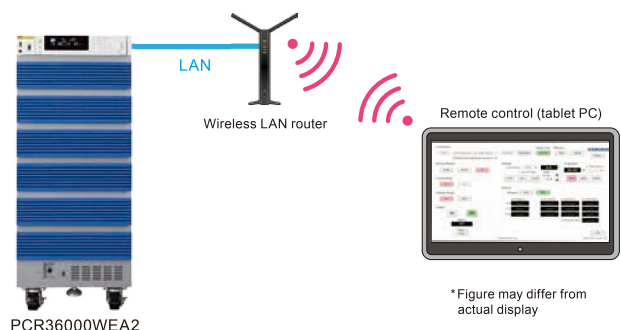
LAN, USB, RS232C Standard Digital Interface

The PCR-WEA/WEA2 series includes a flexible digital interface for users utilizing LAN, USB, and RS232C communication interfaces (GPIB factory option available). LAN connection is LXI compliant, allowing you to monitor and control your device wherever you are via computer, smartphone, or tablet web browser. This feature is particularly important when conducting critical AC tests in anechoic chambers/shield rooms. Additionally, the PCR-WEA can be controlled directly with easy remote-control software for customers with limitations in external communication.

● Wired LAN connection (optical cable)



● Wireless LAN connection



DC Output 100% of Rated Power

The PCR-WEA/WEA2 series enables DC output up to 100% of the AC rated power output.

DC output: **100%** of AC output rating



Power Saving Mode *6 kVA models and higher

● Sleep mode

If the PCR-WEA/WEA2 does not detect output for a certain amount of time, the power unit will go into "sleep mode" and cut power consumption.

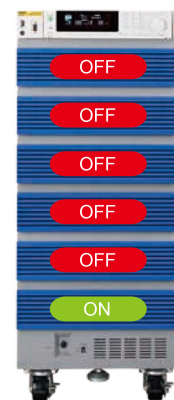
ZZZ..... Sleep mode screen is displayed.



● Power-saving mode

The power-saving feature allows the PCR-WEA to cut the costs of operation by drawing power from only the necessary power modules required to reach the output setting.

[Example]
Only 6 kVA drawn from the 36 kVA model

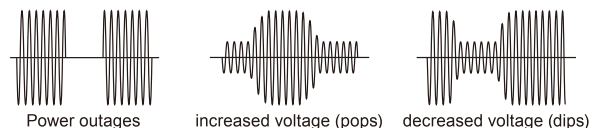


Modular design allows for simple maintenance

Each separate power module can be removed and replaced for maintenance and calibration. *For models 6 kVA and higher

Power Line Error Simulation

The PCR-WEA/WEA2 series can simulate various power line abnormalities such as power outages, voltage drops (dips) and voltage increases (pops). This feature is useful for the testing of power-source switches and various electronic devices.



Built-in parallel operation driver software! Easy parallel operation with a single connection cable.

The PCR-WEA/WEA2 series can be easily configured in a parallel connection with a single cable* per connection for all models 6 kVA and above. This cable can be used in synchronization with a power-interlock cable* to control the ON/OFF status of master/slave units. *Optional

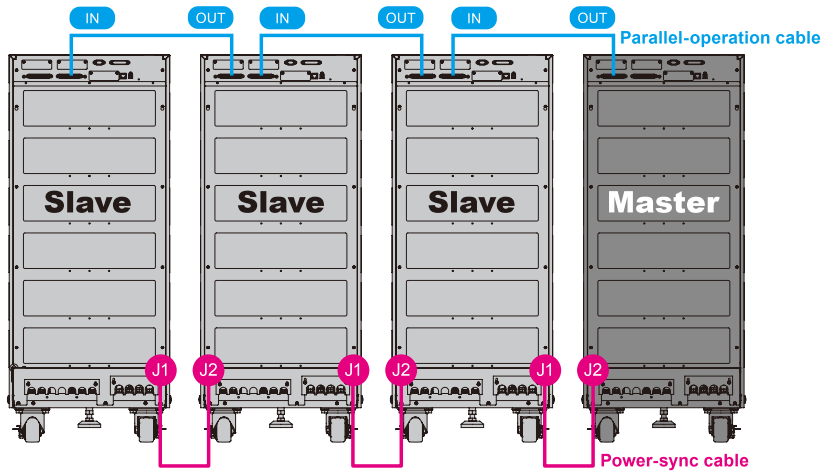
Performance

●Example of the combined system using same models

Capacity	Model	Qty	Parallel operation cable	Qty	Power-sync cable	Qty
12 kVA	PCR6000WEA2	2	PC01-PCR-WE	1	LC01-PCR-LE	1
48 kVA	PCR24000WEA2R	2	PC01-PCR-WE	1	LC01-PCR-LE	1
90 kVA	PCR30000WEA2R	3	PC01-PCR-WE	2	LC01-PCR-LE	2
144 kVA	PCR36000WEA2R	4	PC01-PCR-WE	3	LC01-PCR-LE	3

[PCR36000WEA2R 4 units, example of 144 kVA]

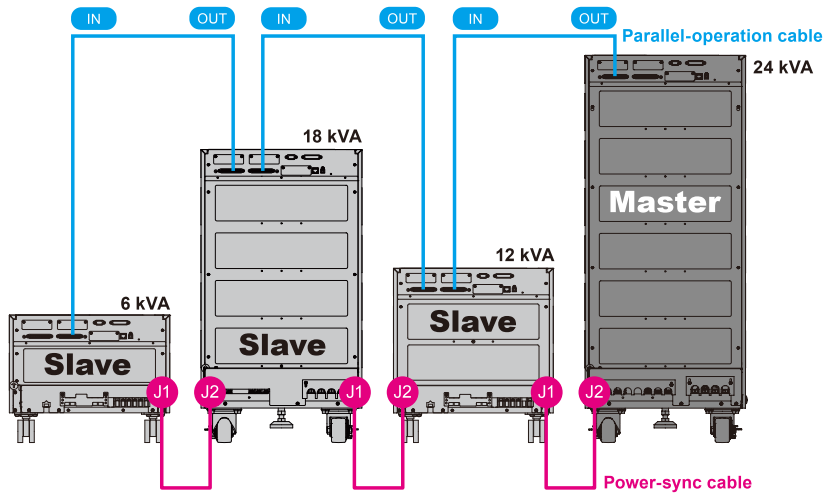
The figure below is a conceptual diagram. Power wiring etc. are also required for system build up. Please consult your local Kikusui distributor.



●Example of the combined system using different models

Capacity	Model	Part	Qty
60 kVA Parallel-operation system	PCR6000WEA2R	AC/DC Power supplies (6 kVA)	1
	PCR12000WEA2R	AC/DC Power supplies (12 kVA)	1
	PCR18000WEA2R	AC/DC Power supplies (18 kVA)	1
	PCR24000WEA2R	AC/DC Power supplies (24 kVA)	1
	PC01-PCR-WE	Parallel operation cable	3
	LC01-PCR-LE	Power-sync cable	3

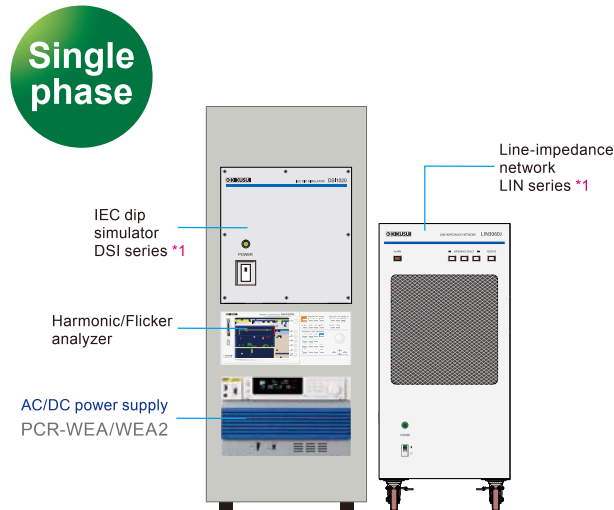
The figure below is a conceptual diagram. Power wiring etc. are also required for system build up. Please consult your local Kikusui distributor.



Applications

For Standard Compliance Testing

● Single-phase system



● Three-phase system



This system can simulate various conditions of phenomena occurring in AC power environments. It can be used for immunity tests of electrical and electronic devices, which are connected to a low-voltage distribution system, or which have DC power input ports, under the standard conditions as specified to the right. The test conditions can be set outside the standard range, allowing the system to be used for preliminary tests prior to standard tests, immunity-margin tests, and stress tests. The KHA3000 harmonic/flicker analyzer combines a PCR-WEA/WEA2 Series AC power supply, LIN Series line-impedance network*1, DSI series IEC dip simulator*2 and application software(Refer to pg.8), allowing tests that conform to IEC standards and JIS standards.

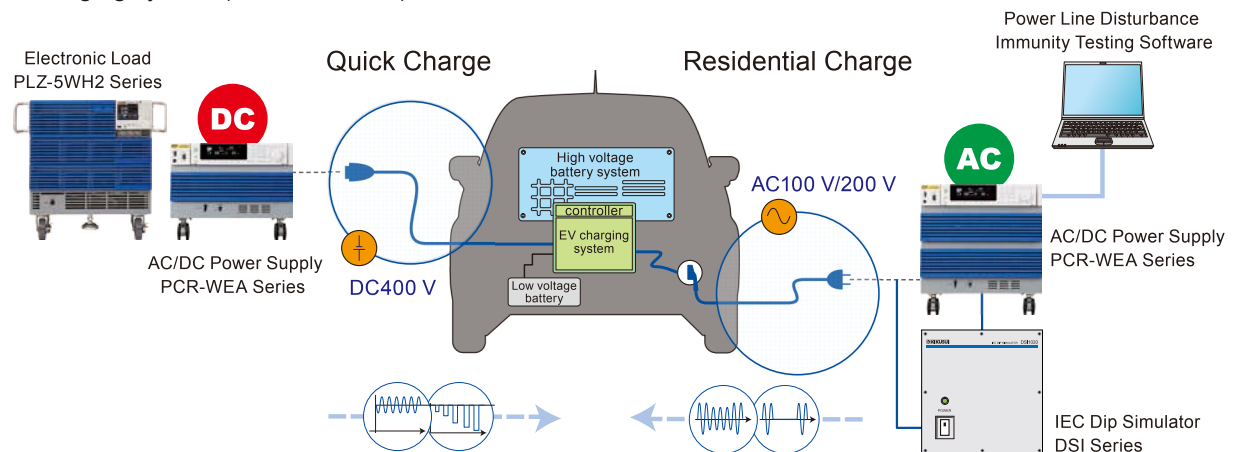
*1 Specially made to order

IEC61000-4-11	Voltage dipping, instantaneous power failure and voltage variation
IEC61000-4-13	Higher harmonics wave/interharmonic wave
IEC61000-4-14	Voltage swing
IEC61000-4-27	Unbalance in units
IEC61000-4-28	Variation in power-supply frequency for units with 16 A/phase
IEC61000-4-34	Voltage drop(dip), instantaneous power failure and voltage variation for units with input current exceeding 16 A/phase
IEC61000-4-17	Ripple at the DC input power terminal
IEC61000-4-29	Voltage drop(dip), instantaneous power failure and voltage variation in DC *2
IEC61000-3-2,12	Harmonic electric current limit level
IEC61000-3-3,11	Voltage fluctuation, Flicker limit level

*2 Designed for preliminary test purposes.

For Testing of the EV Charging System

● EV charging system (item under test)



Simple, user-friendly application software for various standard testing!



Power Line Disturbance Immunity Testing Software

SD009-PCR-LE/WE (Quick Immunity Sequencer 2)

List of conformance to the EMC standard tests

✓ : Conforming as standard ▲ : Partially non-conforming - : Function not available

Standard	Item	Conforming	
		Single-phase	Three-phase
IEC61000-4-11 Voltage dipping, instantaneous power failure and voltage variation	Voltage drop (dip)	✓*1	✓*1
	Instantaneous power failure	✓*1	✓*1
	Voltage variation	✓	✓
	Flat curve	✓	✓
	Over swing	✓	✓
IEC61000-4-13 Higher harmonics wave/interharmonic wave	Frequency sweep	✓	✓
	Odd harmonics the order of which is not a multiple of 3	✓	✓
	Odd harmonics the order of which is a multiple of 3	✓	✓
	Even harmonics	✓	✓
	Interharmonics	✓	✓
IEC61000-4-14 Voltage swing	Meister curve	✓	✓
	Voltage swing	✓	✓
IEC61000-4-17 Ripple at the DC input power terminal	Interval	✓	✓
	Single-phase rectifier circuit	✓	-
IEC61000-4-27 Unbalance in units	Three-phase rectifier circuit	✓	-
	Unbalance	-	▲*2
IEC61000-4-28 Variation in-power supply frequency for units with 16 A/phase	Frequency variation	✓	✓
	Voltage drop (dip)	✓	-
IEC61000-4-29 Voltage drop (dip), instantaneous power failure and voltage variation in DC	Instantaneous power failure	▲*3	-
	Voltage variation	✓	-
	Voltage drop (dip)	▲*4	▲*4
IEC61000-4-34 Voltage drop (dip), instantaneous power failure and voltage variation for units with input current exceeding 16 A/phase	Instantaneous power failure	▲*4	▲*4
	Voltage variation	✓	✓

* Immunity testing for units with 16 A/phase except for those required by IEC61000-4-34

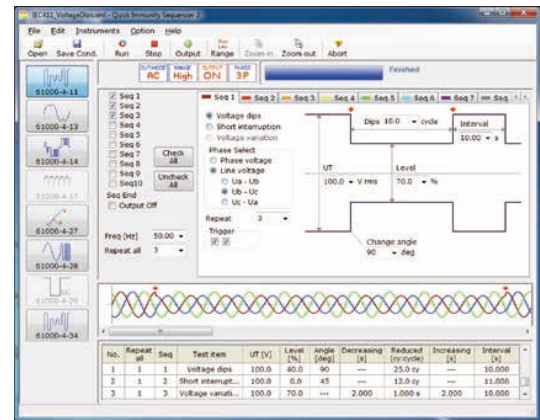
*1 Conforms to the standard when used in combination with IEC Dip Simulator DSI series. If using the PCR-WEA/WEA2 alone, the voltage dips and short-time power failures are preliminary tests.

*2 110 %, 95.2 %, 93.5 %, 90 %, 87 %, 80 %, 74 %, 71 %, 66 % need to respond to sudden changes of 1 μs to 5 μs. The voltage response of PCR-WEA/WEA2 is more than 40 μs at FAST, which is a preliminary test.

*3 Must support output impedance greater than 100 kΩ. The PCR-WEA/WEA2 output impedance is less than 100 kΩ and therefore designed for preliminary testing purposes.

*4 The device between the range of 16A to 75 A requires having the capability of rapid change with 1 μs to 5 μs. The device exceeding 75 A is not required to have the capability of rapid change with 1μs to 5 μs. (It is relaxed to 1 μs to 50 μs for the device exceeding 75 A.)

The latest standards for IEC61000-4 supported!



"Quick Immunity Sequencer 2" (model name: SD009-PCR-LE/WE) is an application software for immunity testing with the AC power supply PCR-WEA/WEA2 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.



Avionics Test Software

SD012-PCR-LE/WE

Supporting compliance testing of avionics test standards.

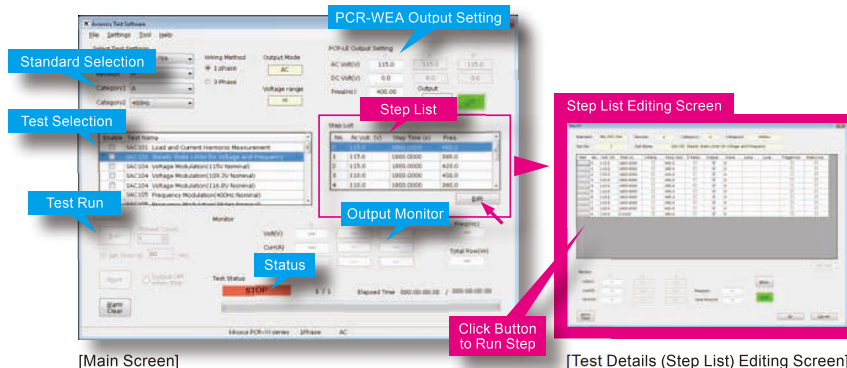
The test pattern can be conducted from the library.

Supported Standards

Military Standard: MIL-STD-704A/E/F

Civilian Standard: RTCA DO-160F/G

Civilian Standard: JIS W0812:2004



- Easy configuration - just select standard from library
- Test-step editing and saving - convenient for development and evaluation required with marginal testing
- Test-condition reporting function - enables test history logging
- Remote control via LAN

Test standards have been established that electrical components and parts installed on aircraft must meet. All electrical components and parts installed on the fuselage must comply with these standards, but the applicable test standards vary according to the intended use and purpose. Test standards can be largely divided into two types: military standards and civilian standards. In addition, aircraft manufacturers sometimes apply their own set of private standards. Avionics Test Software [SD012-PCR-LE/WE] is a software application that supports aircraft test standards, and is used to control the PCR-WEA/WEA2 Series that enables you to conduct the test standards for the MIL-STD-704, RTCA/DO-160 and JIS W0812 standards. Test patterns are library-based, which enables tests to be easily run by simply selecting the wiring configuration and the type of test. In general, the 400 Hz AC power supply is used for large aircrafts, and the 28 V DC power supply is used for the small aircrafts



"Wavy" sequence creation software

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

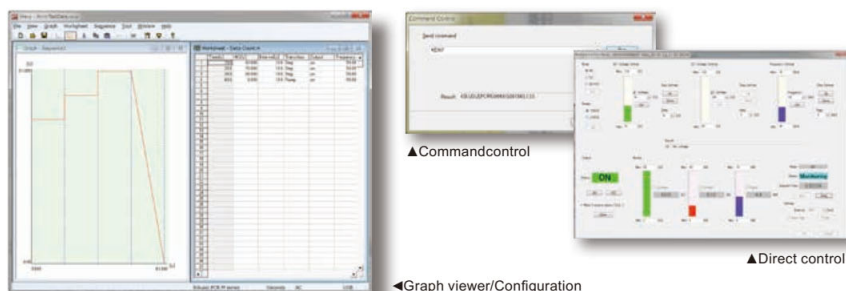
The software extends the feature of waveform generation and sequence functions.

Easy sequence control without programming knowledge!

**Trial version
available on
website!**

<http://www.kikusui.co.jp/en/download/index.html>

Download!



Wavy is an application software that supports sequence creation and the operation for Kikusui power supplies and electronic loads.

Wavy allows you to create and edit sequences visually with a mouse without programming knowledge.

- Makes it easier to create or edit the test-condition file required for the sequence operation.
- By using the storage function of test-condition data file, it enables you to manage the test condition of the standard routine test.
- The progress of execution sequence will be displayed in "practical dialogue" with the setting value and the cursor.
- It is possible to observe the intuitionistic output through the "monitor graph" that plots the ongoing monitor value.
- You can save the acquired monitor data as a test result.
- Added "waveform image" window let's you easily keep track of the AC signal.
- Allows you to edit and create a new arbitrary waveform easily. You can instantly write and then output the created arbitrary waveform.
- You can select or deselect the pause function, trigger function, AC waveform etc. as necessary.



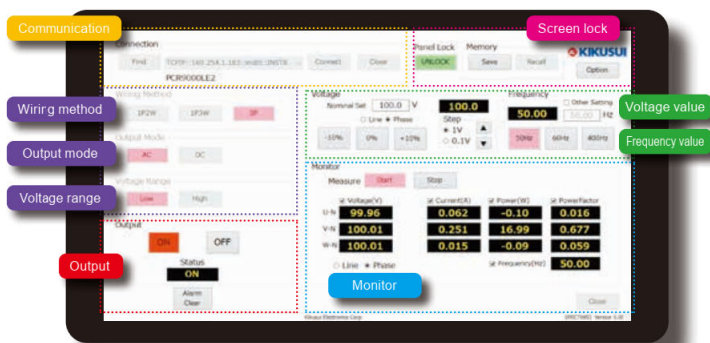
Remote-control software for Windows tablet

SD021-PCR-LE/WE (RMT CONT SOFTWARE FOR PCR-LE/WE)

Windows tablet can be used as a remote controller !

The SD021-PCR-LE/WE is software that can control the PCR-WEA/WEA2 Series. It is capable of changing the setting condition of the "wiring method", "output mode", "voltage range", "voltage value", and "frequency value". And the settings changed by remote control can be saved and recalled. Moreover, it can display the measurement value of the AC power supply. Remote operation and control of the AC power supply can be easily achieved from a distance.

- Operating environment : Intel Core 2 or later / Windows 8.1 / Memory 4 GB / Storage 128 GB / Display resolution 133 x 768 or higher / USB port

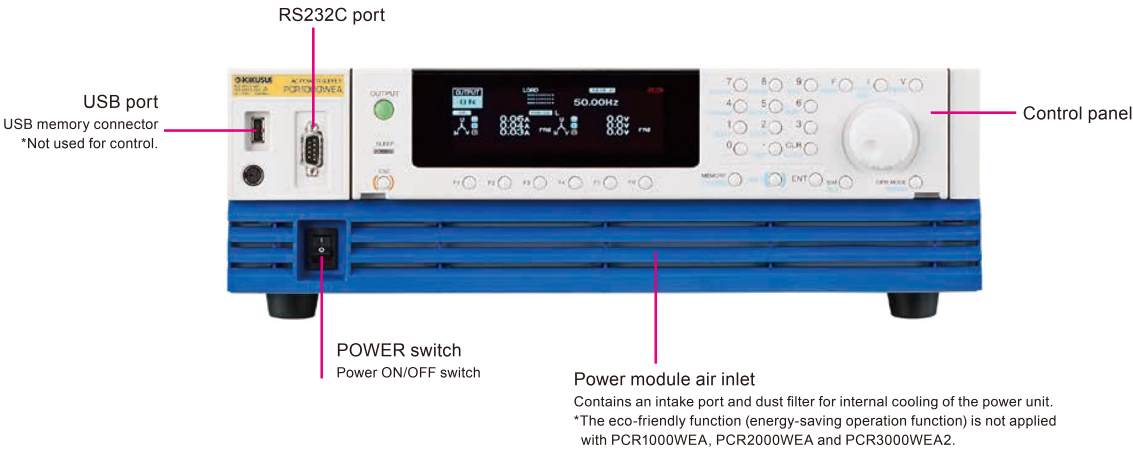


Screen display (main screen)

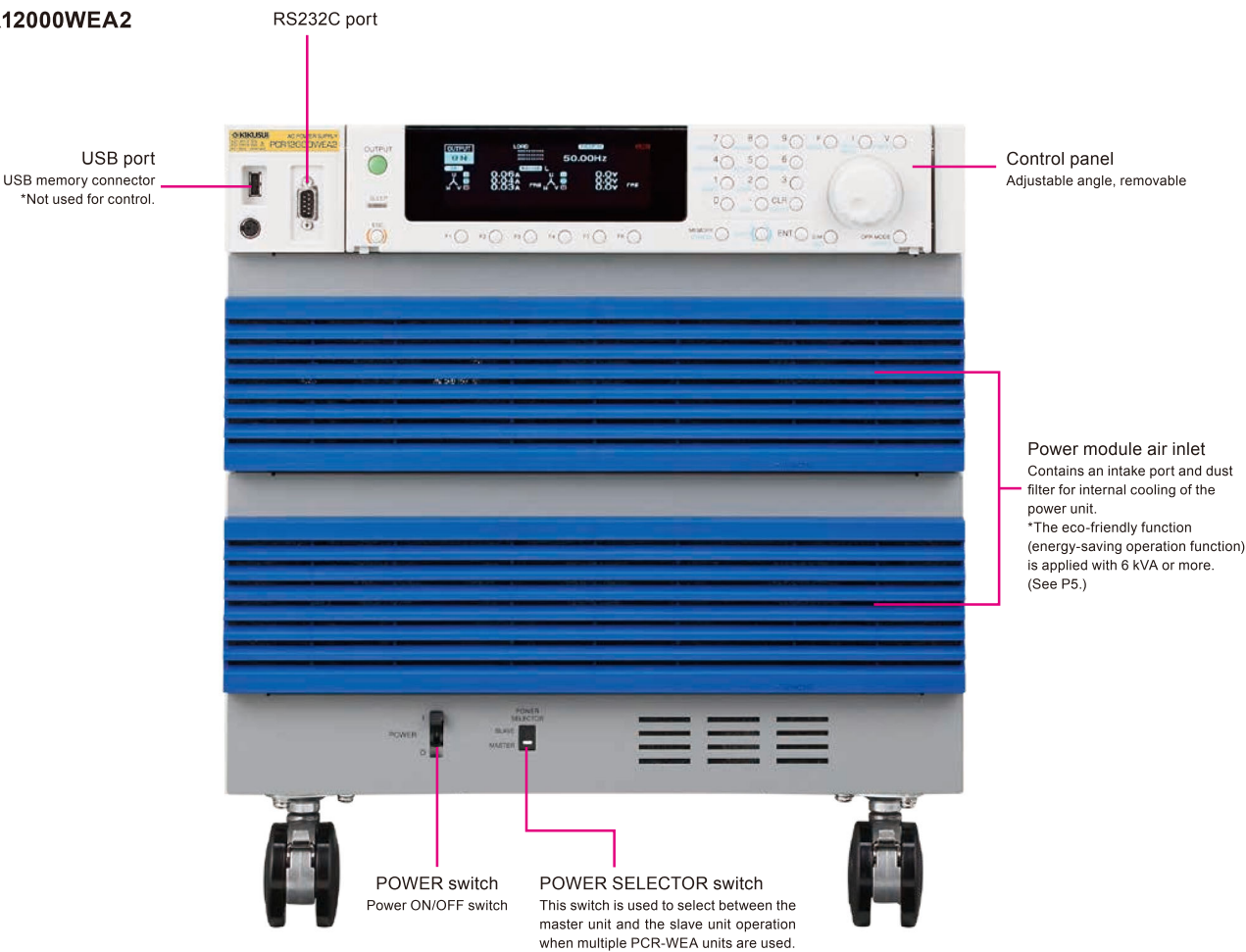
Exterior Design

Front Panel

PCR1000WEA/2000WEA/3000WEA2

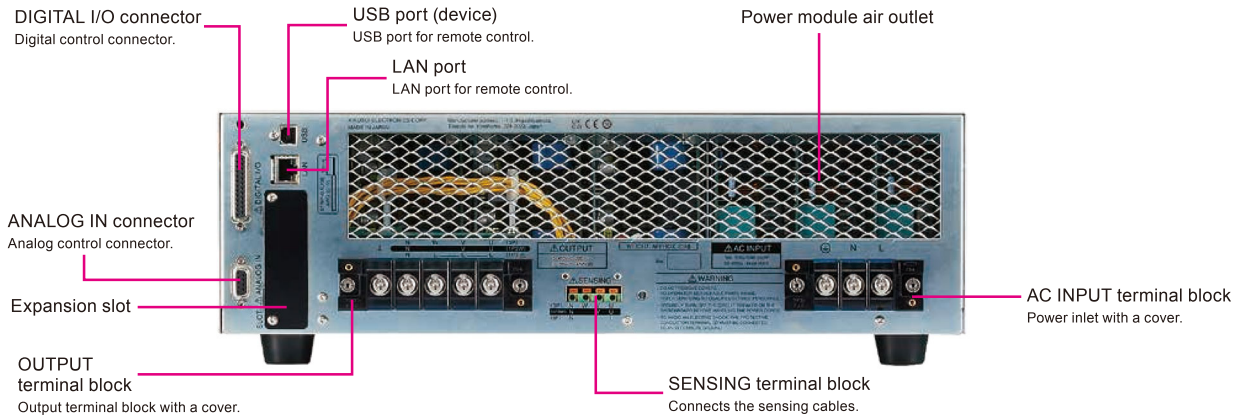


PCR12000WEA2

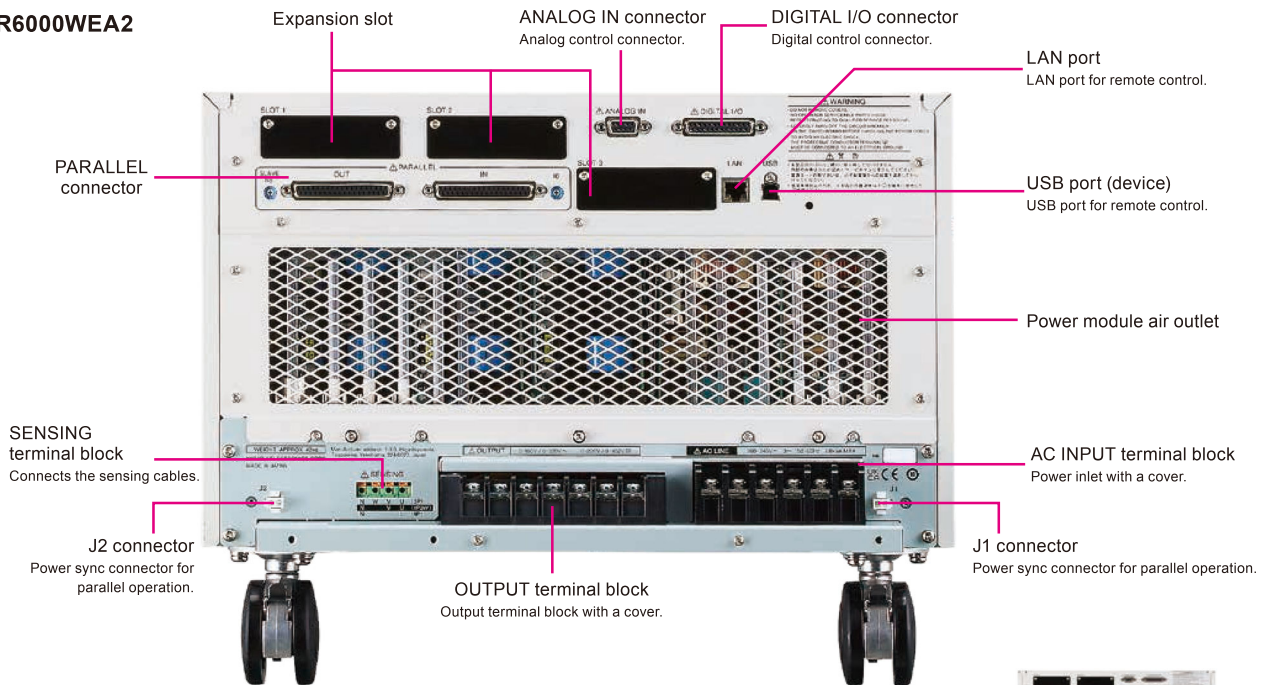


Rear Panel

PCR1000WEA/2000WEA/3000WEA2 *The image is PCR3000WEA2.



PCR6000WEA2



PCR1000WEA
PCR2000WEA
PCR3000WEA2



PCR6000WEA2
PCR6000WEA2R



PCR12000WEA2
PCR12000WEA2R



PCR18000WEA2
PCR18000WEA2R
PCR24000WEA2
PCR24000WEA2R



PCR30000WEA2
PCR30000WEA2R
PCR36000WEA2
PCR36000WEA2R