PCR-LE/LE2 SERIES

High-performance multifunctional AC Power Supplies
PCR-LE/LE2 Series

Capable of various power line abnormality simulations and sequence operation.
Single–phase 500 VA to 9 kVA/Single–phase & three–phase 6 kVA, 9 kVA, 12 kVA, 18 kVA, 27 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–line), and 81 kVA (three–phase)
Features a full range of measuring functions and supports AC, DC, and AC + DC Outputs
Detachable front panel
Eco-friendly function equipped
RS232C as a standard interface, GPIB, USB, and LAN (LXI) are available as an optional interface.

KIKUSUI

New stage of AC power supply supporting new energy field

High-performance AC Power Supplies
PCR-LE SERIES

The PCR-LE Series is a new line of advanced multifunctional AC power supply that has been developed from our PCR-L/LA Series (linear amplifier type).
The PCR-LE Series provides high reliability and can be applied to 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 E-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 enviroment 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 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.

[Applications]

- **Research & Development**
  Proof evaluation for power supply abnormality, EMC testing
- **Adjustment & Inspection Lines**
  Power supply voltage margin check, Automated inspection system
- **Production Lines**
  For stabilizing the line power supply, Automated testing system
- **Quality Assurance**
  IE ard Testing
- **After-Sales Service**
  As power supply for repair and calibration
  To reproduce power line abnormalities

● Lineup

Model	PCR500LE	PCR1000LE	PCR2000LE	PCR3000LE	PCR4000LE	PCR6000LE	PCR9000LE
Output capacity	Single-phase 500 VA	Single-phase 1 kVA	Single-phase 2 kVA	Single-phase 3 kVA	Single-phase 4 kVA	Single-phase 6 kVA	Single-phase 9 kVA
Maximum output current	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
AC mode (L/H range)	1 V to 150 V / 2 V to 300 V						
	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
DC mode (L/H range)	±1.4 V to ±212 V / ±2.8 V to ±424 V						
	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
Dimensions (mm(inches)) (Maximum dimensions)	430 (16.93") W	430 (16.93") W	430 (16.93") W	430 (16.93") (445 (17.52")) W	430 (16.93") (445 (17.52")) W	430 (16.93") (445 (17.52")) W	430 (16.93") (445 (17.52")) W
	173 (6.81") (195 (7.68")) H	262 (10.31") (345 (13.58")) H	389 (15.31") (475 (18.70")) H	690 (27.17") (785 (30.91")) H	690 (27.17") (785 (30.91")) H	944 (36.17") (1040 (40.94")) H	1325 (52.17") (1420 (55.91")) H
	550 (21.65") (600 (23.62")) D	550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D
Weight	Approx. 17 kg (37.4 lbs)	Approx. 35 kg (77.1 lbs)	Approx. 55 kg (121.2 lbs)	Approx. 82 kg (180.7 lbs)	Approx. 96 kg (211.6 lbs)	Approx. 140 kg (308.6 lbs)	Approx. 190 kg (418.8 lbs)
Appearance							

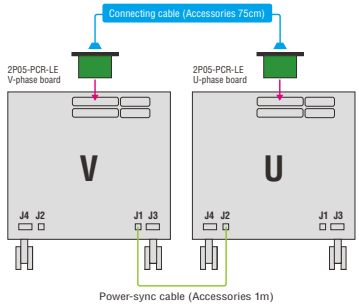
performance

* Input power cord, load cable, terminal block, etc are also required for system build up.
Please make prior arrangements or consult your local Kikusui distributor. (Additional fee)

● Example of single phase 3-wire system configuration

Capacity	Model	Qty	Single-phase three-wire driver	Qty
Single phase 3-wire 1 kVA	PCR500LE	2	2P05-PCR-LE	1
Single phase 3-wire 2 kVA	PCR1000LE	2	2P05-PCR-LE	1
Single phase 3-wire 4 kVA	PCR2000LE	2	2P05-PCR-LE	1
Single phase 3-wire 6 kVA	PCR3000LE	2	2P05-PCR-LE	1
Single phase 3-wire 8 kVA	PCR4000LE	2	2P05-PCR-LE	1
Single phase 3-wire 12 kVA	PCR6000LE	2	2P05-PCR-LE	1
Single phase 3-wire 18 kVA	PCR9000LE	2	2P05-PCR-LE	1

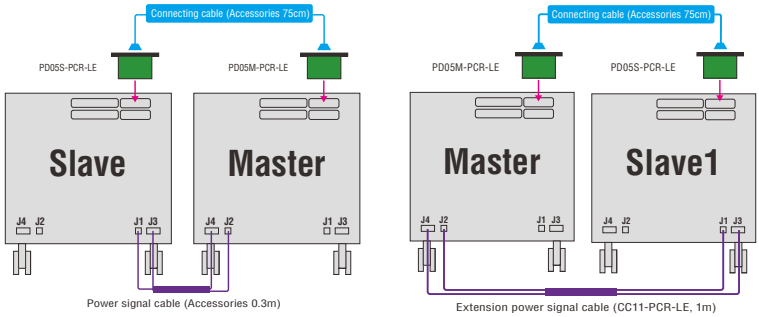
[Example of single phase 3-wire 4 kVA system]



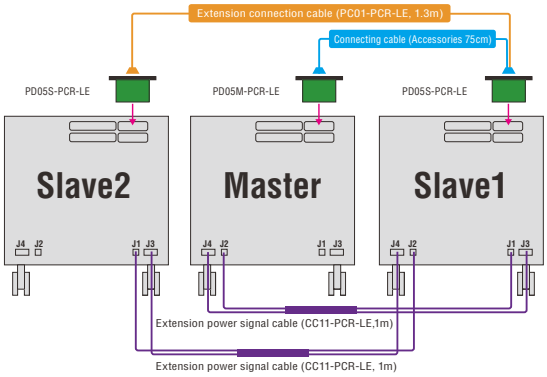
● Example of PCR2000LE parallel operation system configuration

Capacity	Model	Qty	Parallel operation driver (Master)	Qty	Parallel operation driver (Slave)	Qty
Single phase 4 kVA	PCR2000LE	2	PD05M-PCR-LE	1	PD05S-PCR-LE	1
Single phase 6 kVA	PCR2000LE	3	PD05M-PCR-LE	1	PD05S-PCR-LE	2
Single phase 8 kVA	PCR2000LE	4	PD05M-PCR-LE	1	PD05S-PCR-LE	3
Single phase 10 kVA	PCR2000LE	5	PD05M-PCR-LE	1	PD05S-PCR-LE	4

[Example of parallel operation 4 kVA system]



[Example of parallel operation 6 kVA system]



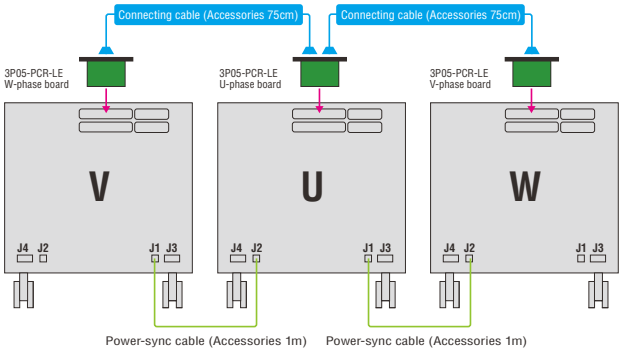
● Example of PCR9000LE parallel operation system configuration

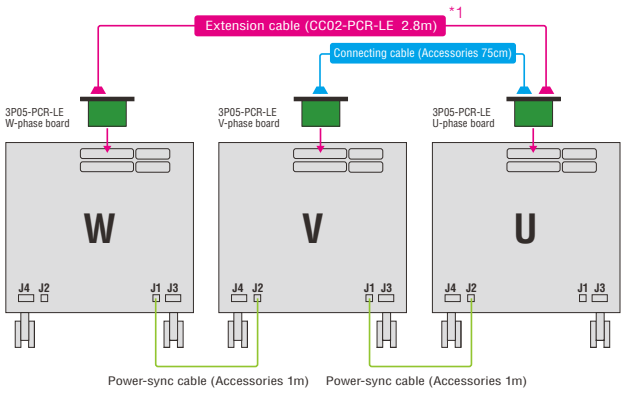
Capacity	Model	Qty	Parallel operation driver (Master)	Qty	Parallel operation driver (Slave)	Qty
Single phase 18 kVA	PCR9000LE	2	PD05M-PCR-LE	1	PD05S-PCR-LE	1
Single phase 27 kVA	PCR9000LE	3	PD05M-PCR-LE	1	PD05S-PCR-LE	2

● Example of three-phase system configuration

Capacity	Model	Qty	Three-phase output driver	Qty
Three phase 1.5 kVA	PCR500LE	3	3P05-PCR-LE	1
Three phase 3 kVA	PCR1000LE	3	3P05-PCR-LE	1
Three phase 6 kVA	PCR2000LE	3	3P05-PCR-LE	1
Three phase 9 kVA	PCR3000LE	3	3P05-PCR-LE	1
Three phase 12 kVA	PCR4000LE	3	3P05-PCR-LE	1
Three phase 18 kVA	PCR6000LE	3	3P05-PCR-LE	1
Three phase 27 kVA	PCR9000LE	3	3P05-PCR-LE	1

[Example of PCR2000LE Three phase 6 kVA system]





* The Master unit for power interlink in order to start up the equipment and the Master unit controlling the system may differ when using the system configuration illustrated above.
* Illustration above is all rear panel.

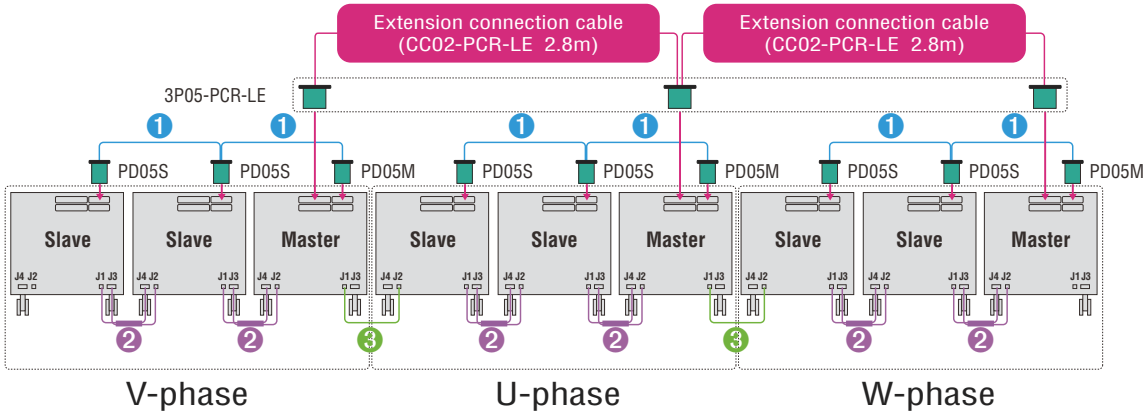
*1: An optional extension cable (CC01-PCR-LE or CC02-PCR-LE) is available as needed according to the unit layout.
* It is not possible to configure the system combined with the parallel operation and the three-phase operation system. Please install the U-phase between the V-phase and the W-phase.

● Example of parallel operation + Three-phase operation system configuration

Capacity	Model	Qty	Part
18 kVA	PCR2000LE	9	AC Power Supplies (2 kVA)
	3P05-PCR-LE	1	Three-phase output driver
	PD05M-PCR-LE	3	Parallel operation driver (Master)
	PD05S-PCR-LE	6	Parallel operation driver (Slave)
	CC02-PCR-LE	2	Extension cable for 2P05·3P05 2.8 m

Capacity	Model	Qty	Part
81 kVA	PCR9000LE	9	AC Power Supplies (9kVA)
	3P05-PCR-LE	1	Three-phase output driver
	PD05M-PCR-LE	3	Parallel operation driver (Master)
	PD05S-PCR-LE	6	Parallel operation driver (Slave)
	CC02-PCR-LE	2	Extension cable for 2P05·3P05 2.8 m

[PCR2000LE 18 kVA example (Paralleled three-phase operation system)]



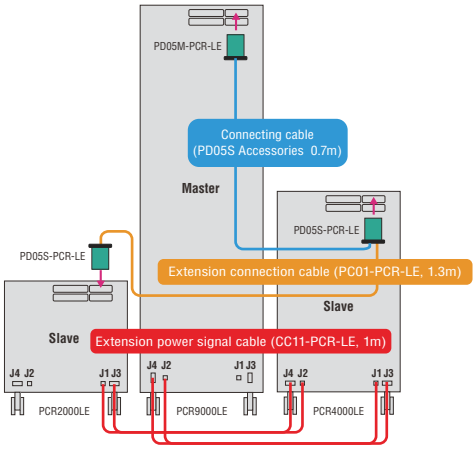
Accessories for three-phase driver and parallel operation driver
❶Connecting cable (0.7m) ❷Power signal cable (0.3m) ❸Power-sync cable (Accessories 1m) *equivalent to the LC01-PCR-LE

● Example of the combined system using different models

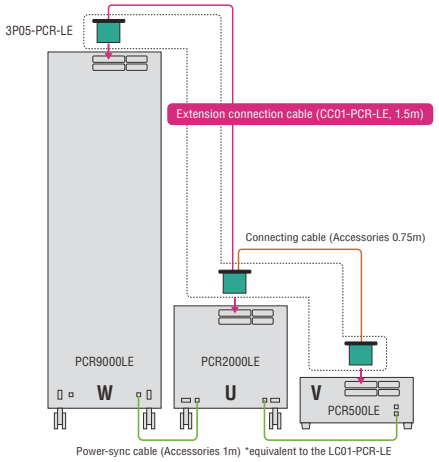
Capacity	Model	Qty	Part
15 kVA Parallel operation system	PCR2000LE	1	AC Power Supplies (2 kVA)
	PCR4000LE	1	AC Power Supplies (4 kVA)
	PCR9000LE	1	AC Power Supplies (9 kVA)
	PD05M-PCR-LE	1	Parallel operation driver (Master)
	PD05S-PCR-LE	2	Parallel operation driver (Slave)
	PC01-PCR-LE	1	Extension connection cable (for parallel operation) 1.3 m
	CC11-PCR-LE	2	Extension power signal cable (for parallel operation) 1 m

Capacity	Model	Qty	Part
1.5 kVA Three phases expended system (11.5 kVA when using in three-phase unbalanced)	PCR500LE	1	AC Power Supplies (500 VA)
	PCR2000LE	1	AC Power Supplies (2 kVA)
	PCR9000LE	1	AC Power Supplies (9 kVA)
	3P05-PCR-LE	1	Three-phase output driver
	CC01-PCR-LE	2	Extension cable for 2P05·3P05 1.5 m

[Example of 3 different-model units in parallel]



[Example of the three-phase unbalanced system]

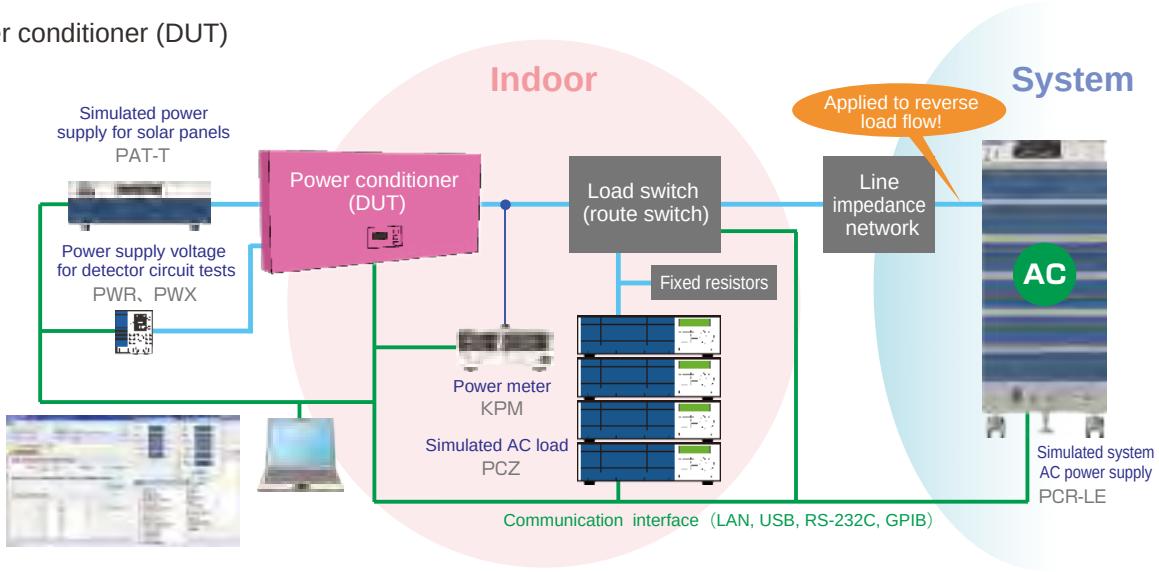


* Illustration above is all rear panel.

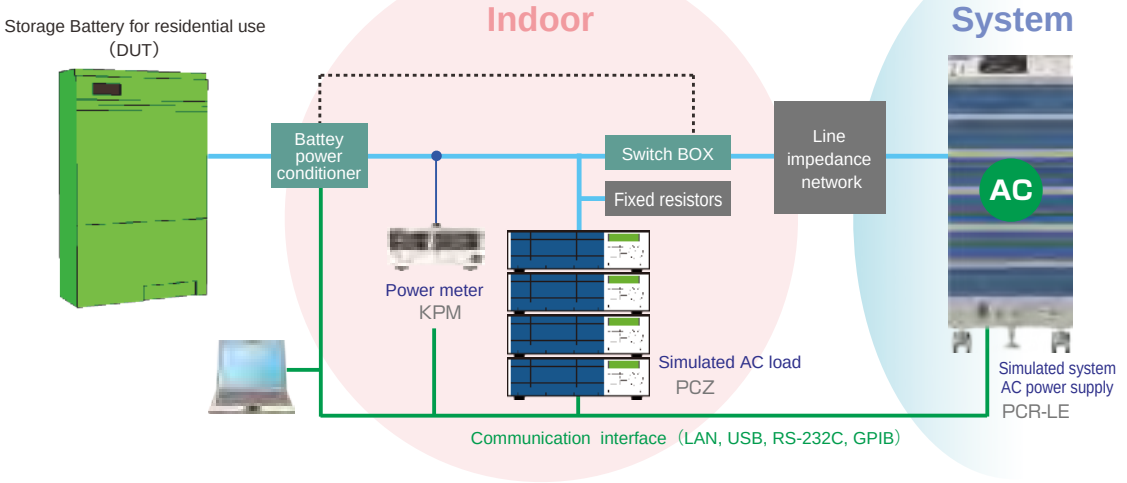
applications

■ For testing of the Smart Grid related applications

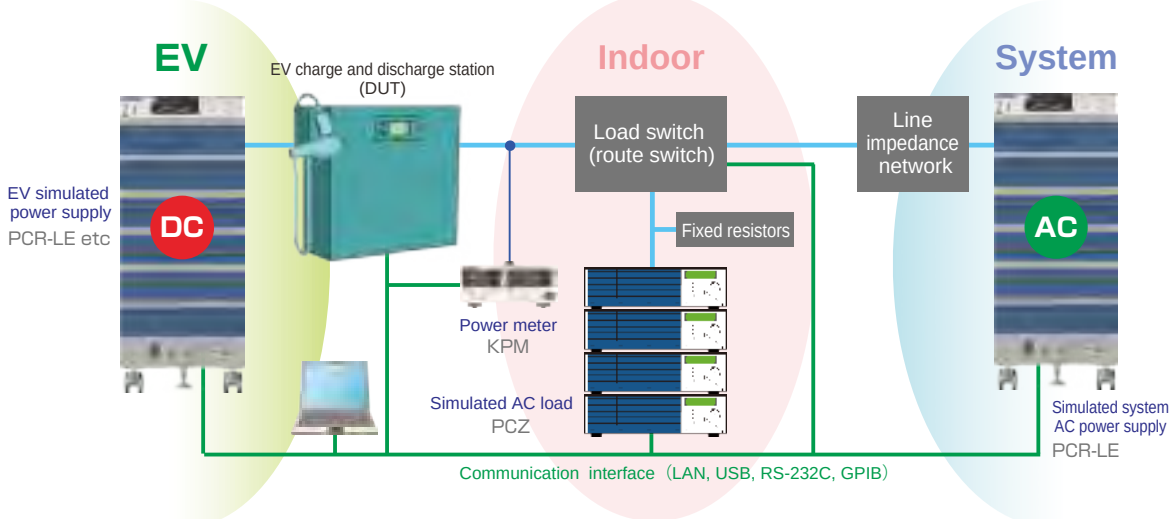
● Power conditioner (DUT)



● Storage Battery for Residential use (DUT)

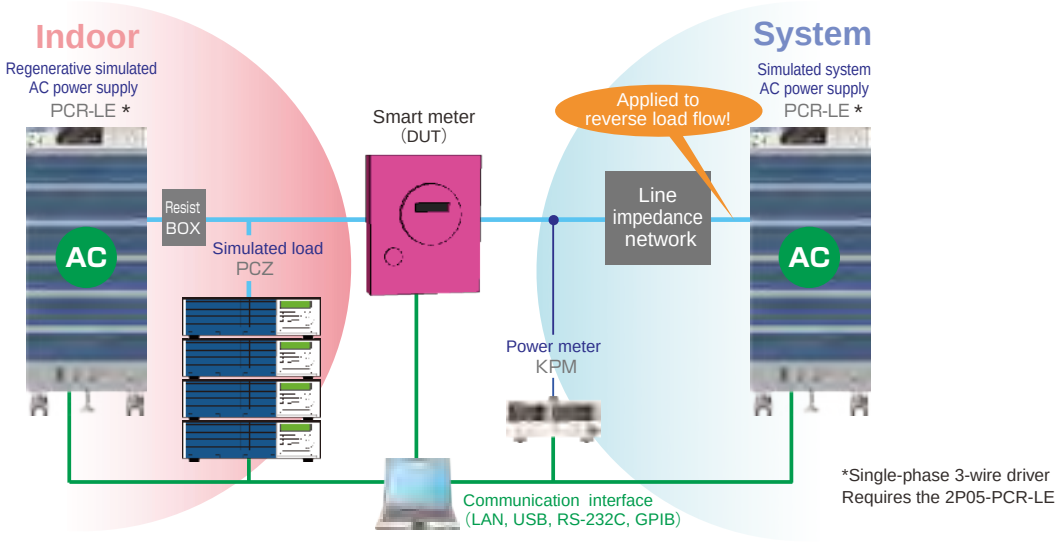


● EV charge and discharge station (DUT)

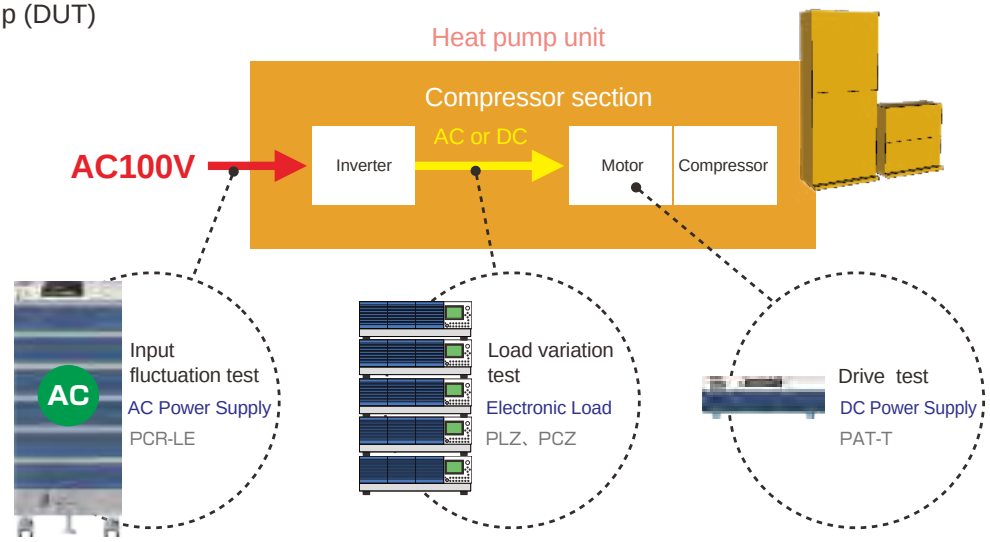


■ For testing of the Smart Grid related applications

● Smart meter (DUT)



● Heat pump (DUT)

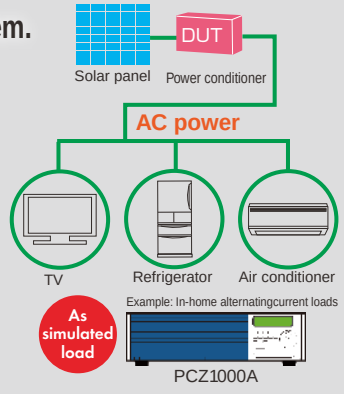


Use as a simulated load for a power conditioner grid connection test system.

AC Electronic Load

PCZ1000A

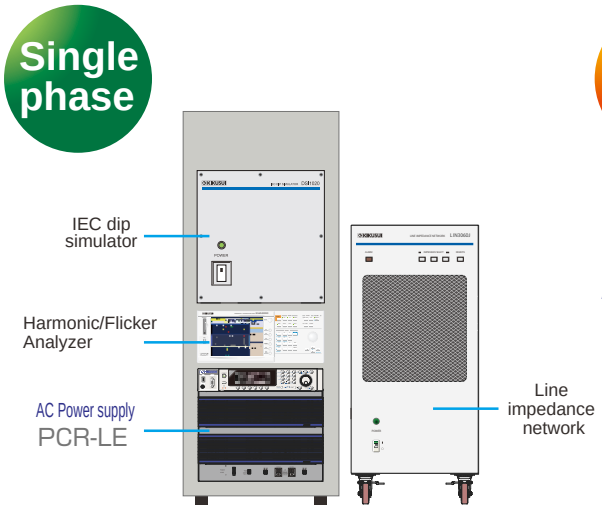
- Maximum input load power: 1000 W
- Input voltage range: 14 V to 280 V(rms)
- Input current range: 0 A to 10 A(rms)
- Input frequency range: 45 Hz to 65 Hz
- Equipped with constant current, constant resistance, and constant power modes.
- Parallel operation function (Max. 5 units, up to 5 kW/50 A rms)
- Equipped with tracking operation function
- Crest factor function
- RS232C equipped as a standard
- Application software(option)



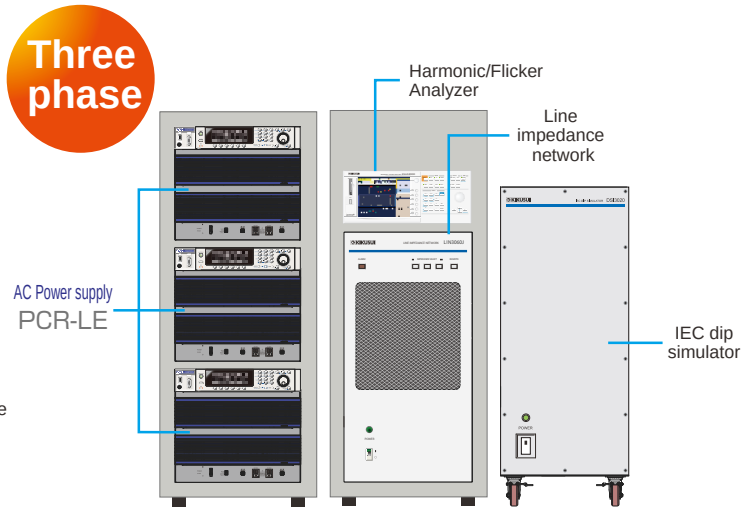
applications

■ For Standard Compliance testing

● Sihgle 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 on 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-LE Series AC power supply, LIN Series line impedance network, and application software*, allowing tests which conform to IEC standards and JIS standards.

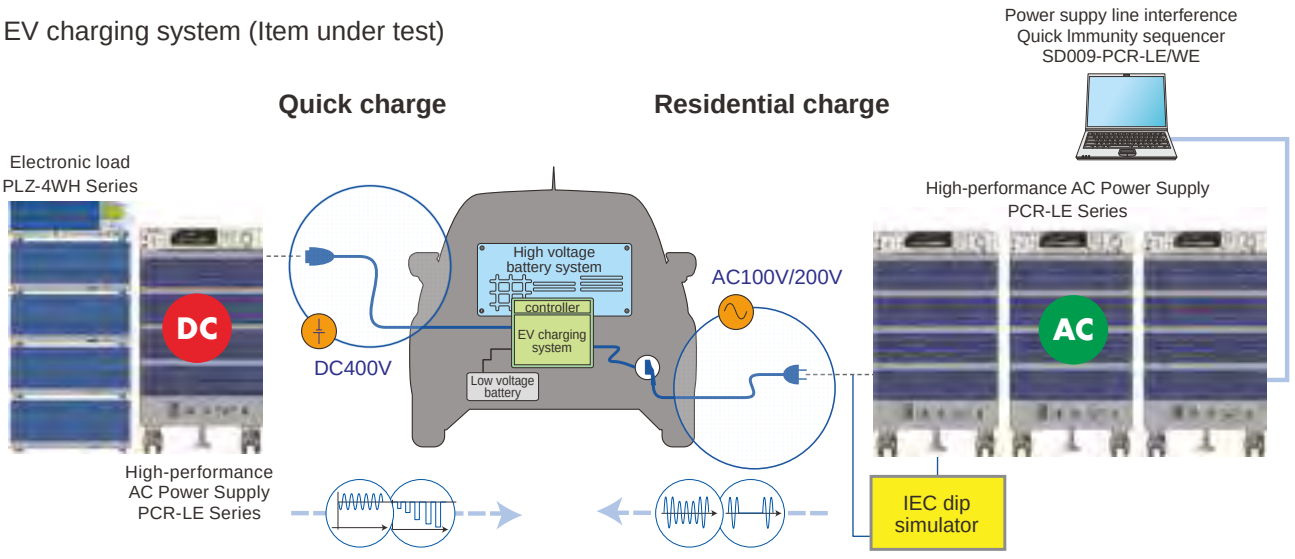
*SD009-PCR-LE/WE [Quick Immunity Sequencer 2] is required. (See P. 16.)

- 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*
- IEC61000-3-2,12.....Harmonic electric current limit level
- IEC61000-3-3,11.....Voltage fluctuation,Flicka limit level

* Designed for preliminary test purposes. For details, please refer to page 15 and 16.

■ For testing of the EV charging system

● EV charging system (Item under test)



IEC Dip·Simulator
DSI Series [DSI1020/DSI3020]


◀ DSI3020

For the Voltage dips, short interruptions and voltage variations immunity test system, complied to the IEC61000-4-11 (2004)

The DSI Series is an option unit used to configure the test system complying with the “Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests” as defined in the IEC61000-4-11 (2004) standard. It can be used in combination with the Kikusui AC power supplies (PCR-LE/LE2 series). It meets the test requirement of : high-speed voltage switching (rise time: 1 µs to 5 µs), voltage dips (0 %, 40 %, 70 %, and 80 %), and phase-voltage and line-voltage tests.

■ **DSI1020 : Applied to the Single-phase two-wire system**
■ **DSI3020 : Applied to the Single-phase two-wire, Single-phase three-wire, Three-phase three-wire, and Three-phase four-wire system.**

- ▶ **Fast Votage rise/fall time (1 µs to 5 µs)**
- ▶ **Applied to the voltage dips (0 %, 40 %, 70 %, and 80 %)**
- ▶ **Applied to the Line Voltage-dip* and the Phase Voltage-dip**
- ▶ **Maximum Line Input voltage 500 V (rms)**

* The Line Voltage-dip applied to only the "DSI3020".

When connecting the DSI Series with the PCR-LE Series, the output capacity of the AC power supply of each phase will be limited. For details, please refer to the individual product brochure or contact our local distributor.

Model	Maximum current (per phase)	Wiring configuration		DIP level	Complied standard	Remarks
		Single phase	Three phase			
DSI1020	16 A	✔		0/40/70/80 %	IEC61000-4-11 (2004)	For Single Phase only
DSI3020	16 A	✔	✔	0/40/70/80 %	IEC61000-4-11 (2004)	For Single Phase or Three Phase

Line Impedance Network
LIN Series [LIN1020JF/LIN3020JF/LIN3060J/OP01-LIN1020JF]

It is equipped with the IEC/JIS standard impedance. It supports voltage fluctuation and flicker tests.


◀ LIN3020JF

■ LIN1020JF

LIN1020JF is equipped with the impedance determined by the IEC flicker test (IEC61000-3-3) and JIS harmonics (JIS C61000-3-2), which can be configured via the USB interface (standard feature) or the contact signal interface from the application software. The single-phase two-wire IEC flicker/harmonics test system can be configured in combination with AC power supply PCR-LE/LE2 and harmonic flicker analyzer KHA1000/KHA3000.

■ LIN3020JF

LIN3020JF is equipped with the impedance determined by the IEC flicker test (IEC61000-3-3) and JIS harmonics (JIS C61000-3-2), which can be configured via the USB interface (standard feature) or the contact signal interface from the application software. The single-phase two-wire/three-wire/three-phase IEC flicker/harmonics test systems can be configured in combination with AC power supply PCR-LE/LE2 and harmonics flicker analyzer KHA1000/KHA3000.

■ OP01-LIN1020JF

OP01-LIN1020JF is an additional unit that is used to expand LIN1020JF in three phases (addition of V phase and W phase).

■ LIN3060J

The LIN3060J is an essential reference impedance unit for building grid-connected power conditioner test systems.

* Note that this is not applicable to the IEC flicker test. Contact us for a product that is compliant with IEC61000-3-11.

Model	Maximum current (per phase)	Wiring configuration	Complied standard			Remarks
			IEC 61000-3-3 230 V 50 Hz	JIS C61000-3-2 *1		
				100 V 50/60 Hz	200 V 50/60 Hz	
LIN1020JF	20 A	Single phase 2-wire	✔	✔	✔	Product for IEC flicker / voltage fluctuation test
LIN3020JF		Single phase 2-wire/3-wire Three phase 3-wire/4-wire	✔	✔	✔	*1 Insertion of the impedance is optional in the JIS harmonics test. (Normally applied for bypass.)
LIN1020JF + OP01-LIN1020JF *2		Single phase 2-wire/3-wire Three phase 3-wire/4-wire	✔	✔	✔	*2 OP01-LIN1020JF does not work solely.
LIN3060J	60 A	Single phase 2-wire/3-wire Three phase 3-wire/4-wire		✔	✔	Product for grid connection test
Impedance Value	Single phase 2-wire		0.4 Ω + Jn0.25 Ω(Z3)	0.4 Ω + 0.37 mH(Z1)	0.38 Ω + 0.46 mH(Z2)	
	Single phase 3-wire Three phase 3-wire Three phase 4-wire		0.24 Ω + Jn0.15 Ω (0.16 Ω+Jn0.1 Ω for N phase)	0.19 Ω + 0.23 mH (0.21 Ω + Jn0.14 mH for N phase)	0.19 Ω+0.23 mH (0.19 Ω + Jn0.23 mH for N phase)	

options

[Caution] For customers using the former PCR-L/LA Series

Please be aware that the PCR-LE Series is not interchangeable with the former PCR-L/LA Series of products. Therefore it is not possible to upgrade a system with a combination of products from the two different series'. In general (with some exceptions) the options from one series cannot be used in the other. If there are any unclear points or for other details, please contact a Kikusui sales office.

■ Application software

* For details, please see the Kikusui homepage.

EMC IEC61000-4

Power Line Disturbance Immunity Testing Software

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

List of conformance to the EMCstandard tests

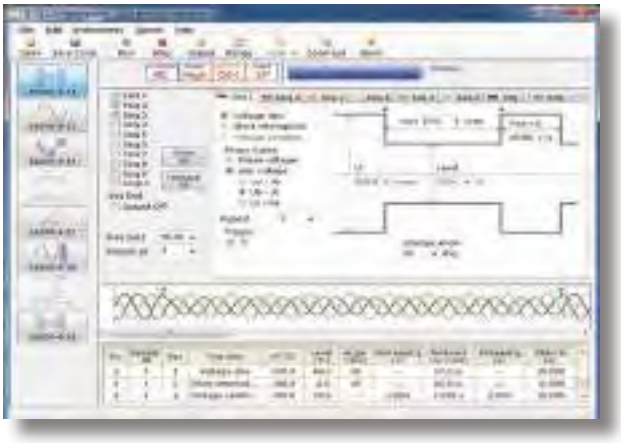
✔ : Conforming as standard
▲ : Partially non-conforming　　– : Function not available

Standard	Item	Conforming	
		Single-phase	Three-phase
IEC61000-4-11 Voltage dips, short interruptions, and voltage variations	Voltage dip	✔ *1	✔ *1
	Short interruption	✔ *1	✔ *1
	Voltage variation	✔	✔
IEC61000-4-13 Harmonics and interharmonics	Flat curve	✔	✔
	Over swing	✔	✔
	Sweep in frequency	✔	✔
	Odd, non multiple of 3	✔	✔
	Odd, multiple of 3	✔	✔
	Even harmonics	✔	✔
	Interharmonics	✔	✔
	Meister curve	✔	✔
IEC61000-4-14 Voltage fluctuation	Voltage fluctuation	✔	✔
	Interval	✔	✔
IEC61000-4-17 Ripple on d.c. input power port	Single-phase rectifier circuit	✔	–
	Three-phase rectifier circuit	✔	–
IEC61000-4-27 Unbalance	Unbalance	–	▲*2
IEC61000-4-28 Variation of power frequency	Frequency variations	✔	✔
IEC61000-4-29 Voltage dips, short interruptions, and voltage variations on d.c. input power port	Voltage dips	✔	–
	Short interruptions	▲*3	–
	Voltage variations	✔	–
IEC61000-4-34 Voltage dips, short interruptions, and voltage variations	Voltage dips	▲*4	▲*4
	Short interruptions	▲*4	▲*4
	Voltage variations	✔	✔

* 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 DIP Simulator. If using the PCR-LE/LE2 alone, the voltage dips and short interruptions are preliminary tests.
*2 Capability of rapid change with 1 µs to 5 µs is required for 110 %, 95.2 %, 93.5 %, 90 %, 87 %, 80 %, 74 %, 71 %, 66 %. Preliminary test is capable since the voltage response of the PCR-LE/LE2 is 20 µs in FAST mode and 30 µs in MEDIUM mode.
*3 Must support output impedance greater than 100 kΩ. The PCR-LE/LE2 output impedance is less than 100 kΩ and therefore designed for preliminary testing purposes.
*4 The device between the range of 16 A to 75 A requires to have the capability of rapid change with 1 µs to 5 µs. The device exceeding 75 A does not require to have the capability of rapid change with 1 µs 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-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.

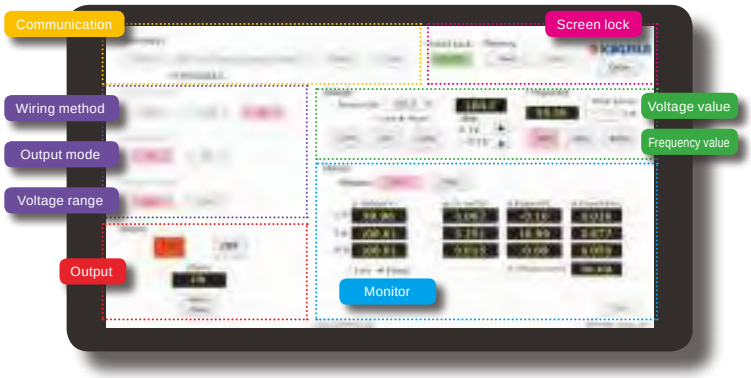
Remote Control Software for the Windows Tablet

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

The Windows tablet can be used as a remote controller !

The SD021-PCR-LE/WE is the software that can control the PCR-LE/LE2 Series. It is capable to change the setting condition of the "wiring method", "output mode", "voltage range", "voltage value", and "frequency value". And these settings changed by the remote controller can be saved and recalled. Moreover, it can display the measurement value of the AC power supply. The remote operation and control of the AC power supply from the distance can be easily realized.

● Operating Environment : Intel Core i5 or better / Windows 10 or Windows 8.1 / Memory 4GB / 10 GB or more free hard disk space / Display resolution 1366×768 dots or better / USB port
*The LAN cable, LAN adaptor (micro USB to the wired LAN), the optional LAN board (LN05-PCR-LE) are required.



Screen display (main screen)

■ Application software

Trial version is available on our web!!
http://www.kikusui.co.jp/en/download/index.html
Download!

“Wavy” Sequence Creation Software

SD011-PCR-LE (Wavy for PCR-LE)

The software extends the feature of waveform generation and sequence functions. Easy sequence control without programming knowledge.

▲Commandcontrol

▲Direct control

◀Graph viewer/Configuration

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. Real-time monitor function is added to the Ver. 4.0 or later, that enables monitoring and logging values of voltage and current. The Ver.5.0 equips Remote Control Panel function that enables you to control power supplies as if you were using a remote controller.

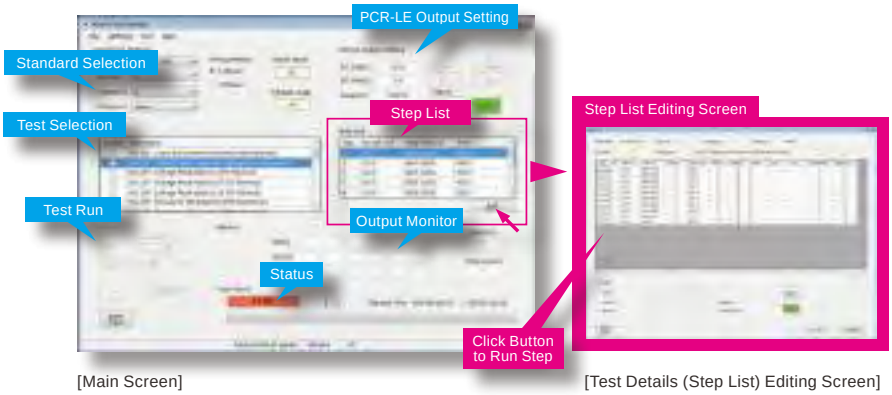
- ■ It makes you easier to create or edit the test condition file required for the sequence operation.
- ■ By using the storage function of test condition data file, it enables you to manage the test condition of the standard routine test.
- ■ The progress of execution sequence will be displayed on the "practical dialogue" with the setting value and the cursor.
- ■ It is possible to observe the intuitionistic output through by the "monitor graph" that plots the ongoing monitor value.
- ■ You can save the acquired monitor data as a test result.
- ■ Added the "waveform image" window. You can easily keep track of the AC signal.
- ■ Allows you to edit and create the new arbitrary waveform easily. You can instantly write then output the created arbitrary waveform.
- ■ Supports the status of description of sequence step for "selected" or "not selected". It enables you to select depends on the requirement such as the "pausing function", "trigger function", or "AC waveform".
- ■ Newly added features of "Sequence Pre-view Dialog" enables you to confirm the waveform before executing the sequence operation.

Avionics Test Software

SD012-PCR-LE/WE

Supported Standards
Military Standard:MIL-STD-704A/E/F
Civilian Standard:RTCA DO-160F/G
Civilian Standard:JIS W0812:2004

Supporting to the compliance testing of the avionics test standard. The test pattern can be conducted from the Library.



[Main Screen] [Test Details (Step List) Editing Screen]

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 support to the aircraft test standards, and is used to control the PCR-LE/LE2 Series that enables you to conduct the test standards for the MIL-STD-704, RTCA/D0-160 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 the large aircraft, and the 28 V DC power supply is used for the small aircraft

- ■ 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

options

■ Interface boards

* Any one of the following can be installed. * LE2 indicates the available option for the multi-output models, "PCR-LE2 Series".

GPIB Interface LE2
IB05-PCR-LE

USB Interface LE2
US05-PCR-LE

LAN Interface (LXI) LE2
LN05-PCR-LE

■ Analog signal interface boards

* Any one of the following can be installed.
* LE2 indicates the available option for the multi-output models, "PCR-LE2 Series".


EX05-PCR-LE

EX05-PCR-LE* (An Amplifier type) LE2

Amplifies the input waveform without changing it. By using this interface board, you can control the PCR-LE with an external contact for (output ON/OFF, sequence start/stop, alarm clear, forced power OFF) and operation status monitoring (output status, alarm status, busy status, current peak limit and overload status).

Note: If the input waveform will be amplified and used in a multi-phase system, one of these interface board is required for each phase.PCR6000LE2 and PCR9000LE2 cannot amplify the input waveform in multi-phase output mode.

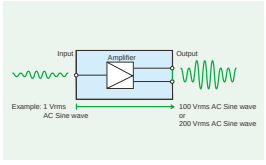

EX06-PCR-LE

EX06-PCR-LE (Amplitude control type) LE2

The output AC voltage value can be varied according to the input voltage signal.By using this interface board, you can control the PCR-LE with an external contact for (output ON/OFF, sequence start/stop, alarm clear, forced power OFF) and operation status monitoring (output status, alarm status, busy status, current peak limit and overload status).

EXT-DC mode

The input waveform is directly amplified and output.



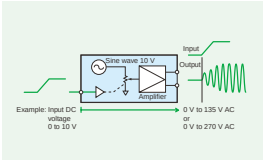
Voltage amplification rate: 100-times or 200-times

Model	Output Wirings	Required Quantity	PCR-LE Series	PCR-LE2 Series
EX05-PCR-LE	Single-phase two-wire	1	PCR-LE Series	PCR-LE2 Series
	Single-phase three-wire	2	U-phase,V-phase	U-phase,V-phase *
	Single-phase three-wire /four-wire	3	U-phase,V-phase, W-phase	U-phase,V-phase, W-phase *
EX06-PCR-LE	Single-phase two-wire	1	PCR-LE Series	PCR-LE2 Series
	Single-phase three-wire	1	U-phase	U-phase
	Single-phase three-wire /four-wire	1		

*The PCR6000LE2 and PCR9000LE2 do not have a feature to amplitude the input waveform in the multiple output mode.

EXT-AC mode

The voltage of the output alternating current can be changed based on the level input DC signal.



Voltage amplification rate: 13.5-times or 27-times

■ Input power cord/Power-sync cable

* LE2 indicates the available option for the multi-output models, "PCR-LE2 Series".

For PCR1000LE
3-core cabtire cables 5.5 mm²/3 m M4
AC5.5-3P3M-M4C

For PCR2000LE
3 single-core cables 8 mm²/3 m M5
AC8-1P3M-M5C-3S

For PCR3000LE/PCR6000LE/PCR6000LE2 LE2
3 single-core cables 14 mm²/3 m M8
AC14-1P3M-M8C-3S

For PCR4000LE
3 single-core cables 22 mm²/3 m M8
AC22-1P3M-M8C-3S

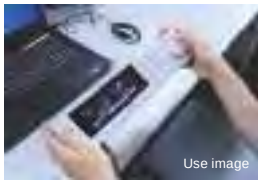
For PCR9000LE/PCR9000LE2 LE2
4 single-core cables 14 mm²/3 m M5
AC14-1P3M-M5C-4S

Power-sync cable,1 m
Multiple units of the PCR-LE Series can be connected and turned ON/OFF.
LC01-PCR-LE

■ Control panel cable

* LE2 indicates the available option for the multi-output models, "PCR-LE2 Series".

Extension cable for control panel LE2
EC05-PCR (cable's length: 2 m)



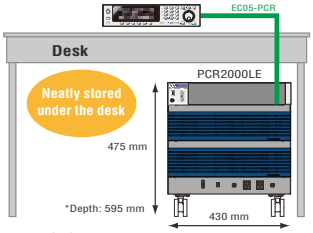


Image of using EC05-PCR

■ Parallel operation driver


PD05M-PCR-LE


PD05S-PCR-LE

Note: When using this product, a PCR-LE Series unit with firmware version 3.01 or later is required.
If the firmware of your product is 1.X or earlier, modifications and other changes will be required. Please consult with your local distributor. This option cannot be used with PCR500LE or PCR1000LE.

Parallel operation driver (Master)
PD05M-PCR-LE

Parallel operation driver (Slave)
PD05S-PCR-LE

Accessories: Connecting cable (0.7 m), Power signal cable (0.3 m)

Extension cable
This extension cable is used if the provided connection cable (0.7 m) or power signal cable is too short when the master unit layout is changed or when connecting different models together.

Extension connection cable (1.3 m) **PC01-PCR-LE**
*Used between models with a power difference of 4 kVA or more.

Extension power signal cable (1 m) **CC11-PCR-LE**
*Used when the placement of Master and Slave devices are reversed.

■ Single-phase 3-wire output /Three-phase output driver

* A single-phase 3-wire output driver and three-phase operation output driver cannot be used in combination.


2P05-PCR-LE


3P05-PCR-LE

Note: When using this product, the PCR-LE Series unit with firmware version 2.0 or later is required.
If the firmware of your product is 1.X or earlier, modifications and other changes will be required. Please consult with your local distributor.

Single-phase 3-wire output driver
2P05-PCR-LE

Accessories : Connecting cable (0.75m), Power-sync cable (LC01-PCR-LE, 1 m)

Three-phase output driver/Three-phase output driver (500 Hz limit type)
3P05-PCR-LE/3P05-PCR-LE (500Hz LMT)

Accessories : Connecting cable (0.75 m)×2, Power-sync cable (LC01-PCR-LE, 1 m) ×2

Extension cable
This extension cable is used if the provided connection cable (0.75 m) is too short when connecting different models together or when using the parallel operation driver.

Extension connection cable (1.5 m) **CC01-PCR-LE**
*Used between models with a power difference of 2 kVA or more, as well as in cases where two units are paralleled per phase for paralleled three-phase operation. CC02-PCR-LE is required in cases where a model smaller than the PCR2000LE is used for a three-phase operation system with PCR9000LE.

Extension connection cable (2.8 m) **CC02-PCR-LE**
*Used for paralleled three-phase operation system where three units or more are in parallel per phase.

■ Rack mount/Prodout about standard

For PCR500LE Brakets
KRB4 (For EIA inch size)
KRB200 (For JIS metric size)

For PCR1000LE Brakets
KRB6 (For EIA inch size)
KRB300 (For JIS metric size)

For PCR2000LE Brakets
KRB9 (For EIA inch size)
KRB400 (For JIS metric size)

Base holding angle
OP03-KRC

Residual charge measurement
SPEC40414A

This unit is applied to the residual charge measurement in conformance with the Electric Appliance Safety Law, IEC60950-1, IEC60335-1, IEC60065, and other regulations. It allows residual charge to be measured easily and accurately without unplugging work.

exterior design

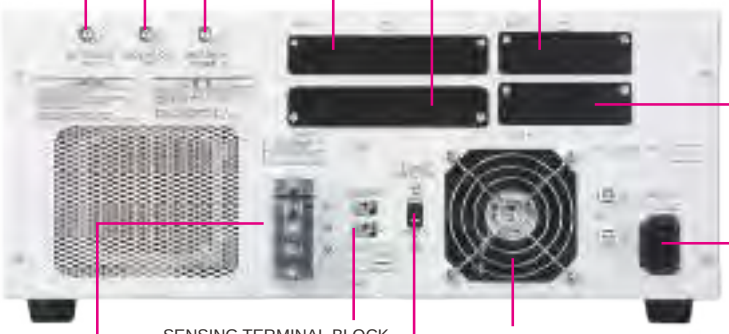
■ Front panel

PCR500LE

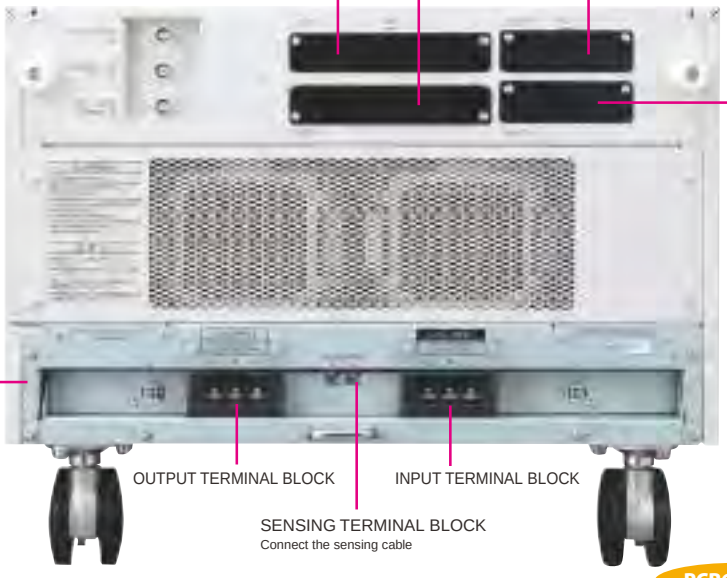
PCR2000LE

■ Rear panel

PCR500LE



PCR1000LE



Input/output terminal block tray
(Excluding the PCR500LE)
Slide-out structure allows wiring easily.

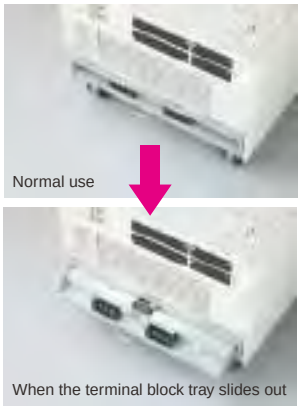
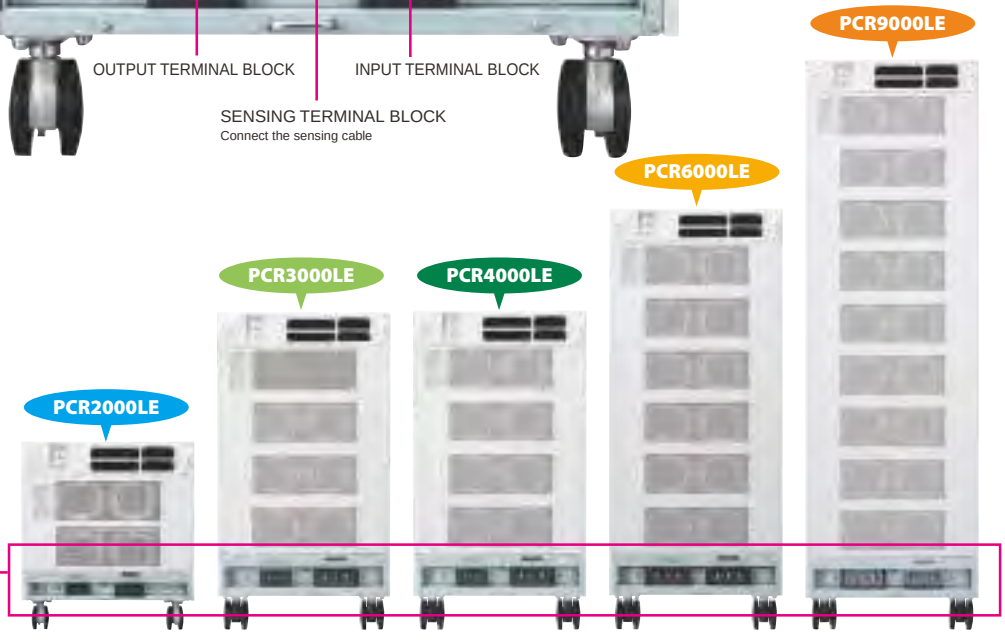


Photo : PCR1000LE

*In case the terminal block tray is not returned to the position in the storage compartment, the PCR-LE can not be operated even if the power switch is turned on.



specifications

Item/Model		PCR500LE	PCR1000LE	PCR2000LE	PCR3000LE	PCR4000LE	PCR6000LE			PCR9000LE	
Input ratings (AC rms)		1P2W						3P3W200V	3P4W400V	3P3W200V	3P4W400V
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		47Hz to 63Hz									
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)		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) *3		± (0.3 % of set + 0.6 V)									
Max. current (output L range, output H range) *4		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 *5		Max. current (rms) × 4 (TYP)									
Max. reverse current *6		30 % of the max. current (rms)									
Load power factor		0 to 1 (leading or lagging) *4									
Frequency *4		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		±1.4 V to ±212 V / ±2.8 V to ±424 V									
	Resolution	0.1 V									
Voltage setting range		-215.0 V to +215.5 V / -431.0 V to +431.0 V									
Voltage setting accuracy (output L range, output H range) *7		±(0.05 % of set + 0.05/0.1 V)									
Max. current *8		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 *9		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 *10		Within ±0.1 %									
Load regulation (output L range, output H range) *11		Within ±0.1 V, within ±0.2 V									
Output frequency variation *12	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 *13		100 ppm/°C (TYP)									
Output frequency stability, output voltage waveform distortion ratio, output voltage response speed, efficiency											
Output frequency stability *14		Within ±5×10^{-5}									
	Setting accuracy	Within ±1×10^{-4}									
Output voltage waveform distortion ratio *15	FAST	±0.2 % or less					–				
	MEDIUM	±0.3 % or less									
Output voltage response speed *16	FAST	20 µs (TYP)					–				
	MEDIUM	30 µs (TYP)									
Efficiency *17		54 % or more, 56 % or more	55 % or more, 57 % or more				58 % or more				
Meters (fluorescent display)											
Voltmeter *18	Resolution	0.1 V									
	Accuracy	± (1 % of rdng + 2 digits) (10 V to 424 V and at room temperature)									
Ammeter *18	Resolution	0.01 A			0.1 A						
	Resolution	±(1 % of rdng + 2 digits) (5 % of the max. rated current to max. rated current and at room temperature)									
Wattmeter *19	Resolution	0.1 W / 1W			1 W						
	Resolution	±(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.)									

*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 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 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.
*5 For capacitor-input rectifier loads (however, this is limited by the rated output current's rms value).
*6 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).
*7 With no load at room temperature
*8 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.
*9 Limited by the rated output current's rms value
*10 With respect to changes in the rated range
*11 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.
*12 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.
*13 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.
*14 With respect to changes in all rated ranges
*15 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.
*16 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.
*17 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.
*18 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.
*19 When the output frequency is between 45 Hz and 65 Hz.

Item/Model		PCR500LE	PCR1000LE	PCR2000LE	PCR3000LE	PCR4000LE	PCR6000LE		PCR9000LE	
BNC terminals		1P2W					3P3W200V	3P4W400V	3P3W200V	3P4W400V
SEQ TRIG OUT *1		Pulse width approx. 10 µs, 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 *1		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 *1		Operating pulse width 10 µs or greater, photo-coupler input, driving voltage 5 V, serial resistance approx. 470 Ω, active with 7 mA source, BNC connector								
Limit Values and Protection Functions										
Voltage	AC voltage upper limit AC voltage lower limit	0.0 V to 305.0 V								
	DC voltage upper limit DC voltage lower limit	-431.0 V to +431.0 V								
	Output overvoltage protection AC/AC+DC mode	0.0 V to 474.1 V								
	Output overvoltage protection DC mode	-474.1 V to +474.1 V								
	Output undervoltage protection AC/AC+DC mode	0.0 V to 474.1 V								
	Output undervoltage protection DC mode	-474.1 V to +474.1 V								
	Resolution	0.1 V								
Frequency	Upper limit Lower limit	1 Hz to 999.9 Hz *2								
	Resolution	0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 999.9 Hz)								
Current	Current limit*3 AC mode	0.50 A to 5.50 A	1.00 A to 11.00 A	2.00 A to 22.00 A	3.00 A to 33.00 A	4.00 A to 44.00 A	6.00 A to 66.00 A		9.00 A to 99.00 A	
	Current limit*3 DC/AC+DC mode	0.35 A to 3.85 A	0.70 A to 7.70 A	1.40 A to 15.40 A	2.10 A to 23.10 A	2.80 A to 30.80 A	4.20 A to 46.20 A		6.30 A to 69.30 A	
	Positive peak current limit*4	0.50 A to 22.00 A	1.00 A to 44.00 A	2.00 A to 88.00 A	3.00 A to 132.0 A	4.00 A to 176.0 A	6.00 A to 264.0 A		9.00 A to 396.0 A	
	Negative peak current limit*4	-0.50 A to -22.00 A	-1.00 A to -44.00 A	-2.00 A to -88.00 A	-3.00 A to -132.0 A	-4.00 A to -176.0 A	-6.00 A to -264.0 A		-9.00 A to -396.0 A	
	Resolution*5	0.01 A (0.35 A to 100.0 A), 0.1 A (100.0 A to 396.0 A)								
General										
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 (37.4 lbs)	Approx. 35 kg (77.1 lbs)	Approx. 55 kg (121.2 lbs)	Approx. 82 kg (180.7 lbs)	Approx. 96 kg (211.6 lbs)	Approx. 140 kg (308.6 lbs)	Approx. 140 kg (308.6 lbs)	Approx. 140 kg (308.6 lbs)	Approx. 190 kg (418.8 lbs)	Approx. 190 kg (418.8 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	The input power cable is not included. Please refer to the list of ordering information specified on the last page.								
	Setup guide	1 copy									
	Quick Reference	1 each for English and Japanese									
	Safety information	1 copy									
	CD-ROM (User's manual)	1 disc									
Electromagnetic compatibility (EMC) *6, 7		Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN61326-1(ClassA *8), EN55011(ClassA *8, Group1 *9) EN61000-3-2 *10, EN61000-3-3 *10 The maximum length of all cables and wires connected to the PCR-LE Series must be less than 3 m.			Complies with the requirements of the following directive and standards. EMC Directive 2014/30/EU EN61326-1(ClassA *8), EN55011(ClassA *8, Group1 *9) The maximum length of all cables and wires connected to the PCR-LE Series must be less than 3 m.					
Safety *6		Complies with the requirements of the following directive and standard. Low Voltage Directive 2014/35/EU *7 EN 61010-1 Class I *11, Pollution Degree 2								

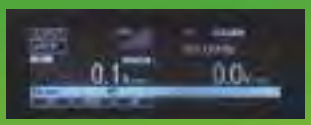
*1 Although signals are insulated with output terminals, each signal is common. Logic setting is also possible.
*2 The frequency is limited to the range from 1 Hz to 500.0 Hz when the 3P05-PCR-LE(500HZ LMT) is installed in the PCR-LE series.
*3 The current that can actually be supplied is 1.1 times the rated current or the current limit, whichever is less.
*4 The current that can actually be supplied is the maximum peak current or the current limit, whichever is less.
*5 You can set the current in 0.01 A/ 0.1 A steps, but it may not change at this resolution depending on the relationship with the internal D/A resolution.
*6 Does not apply to specially ordered or modified PCR-LEs.
*7 Only on models that have the CE marking on the panel.
*8 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.
*9 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.
*10 PCR500LE, PCR1000LE, PCR2000LE only.
*11 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 single-phase, single-phase 3-wire,* Convenient multiple output supports a wide AC power supply offering superior space factor

High-performance AC Power Supplies
PCR-LE2 SERIES

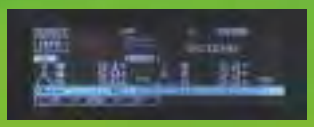
The PCR-LE2 Series are designed based on the PCR-LE Series that supports single-phase output, single-phase 3-wire output *, and three-phase output within the rated capacity by selecting the switch from the front panel operation. The PCR-LE2 series offer the same basic performance, using the common power unit of the PCR-LE Series, with providing easier installation and saving the space more efficiently compare to the individual allocation of the system for a single-phase, single-phase 3-wire, and three-phase systems. The lineup of PCR-LE2 Series are available in 5 models: 6 kVA, 9 kVA, 12 kVA, 18 kVA, and 27 kVA model.

*2/3 of the rated output power



Single-phase output display screen

Single-phase 3-wire output display screen



Three phase output display screen

PCR6000LE2 PCR9000LE2

PCR27000LE2

and three-phase power with a single unit.
range of industrial devices.
and cost performance.

*: The Output power with single-phase 3-wire limits 2/3 of the rated output.

● Lineup

Model		PCR6000LE2	PCR9000LE2	PCR12000LE2	PCR18000LE2	PCR27000LE2
Output capacity	Single-phase, Three phase 4-wire	6 kVA	9 kVA	12 kVA	18 kVA	27 kVA
	Single phase 3-wire	4 kVA	6 kVA	9 kVA	12 kVA	18 kVA
Maximum output current	Single-phase	60 A / 30 A	90 A / 45 A	120 A / 60 A	180 A / 90 A	270 A / 135 A
	Single phase 3-wire	20 A / 10 A	30 A / 10 A	40 A / 20 A	60 A / 30 A	90 A / 45 A
ACmode (L/H range)		1 V to 150 V / 2 V to 300 V				
	Single-phase	60 A / 30 A	90 A / 45 A	120 A / 60 A	180 A / 90 A	270 A / 135 A
	Three phase 4-wire	20 A / 10A	30 A / 15 A	40 A / 20 A	60 A / 30 A	90 A / 45 A
DC mode (L/H range)		±1.4 V to ±212 V / ±2.8 V to ±424 V				
	Single-phase	42 A / 21 A	63 A / 31.5 A	84 A / 42 A	126 A / 63 A	189 A / 94.5 A
	Single phase 3-wire	14 A / 7A	21 A / 10.5 A	28 A / 14 A	42 A / 21 A	63 A / 31.5 A
Dimensions (mm(inches)) (Maximum dimensions)		430 (16.93") (445 (17.52")) W	430 (16.93") (445 (17.52")) W	(1585 (62.40")) W *OP03-KRC included.	(1585 (62.40")) W *OP03-KRC included.	(1585 (62.40")) W *OP03-KRC included.
		944 (36.17") (1040 (40.94")) H	1325 (52.17") (1420 (55.91")) H	(790 (31.10")) H	(1045 (41.14")) H	(1425 (56.10")) H
		550 (21.65") (595 (23.43")) D	550 (21.65") (595 (23.43")) D	(835 (32.87")) D	(835 (32.87")) D	(835 (32.87")) D
Weight		Approx. 140 kg (308.6 lbs)	Approx. 190 kg (418.8 lbs)	Approx. 350 kg (771.6 lbs)	Approx. 480 kg (1058.2 lbs)	Approx. 630 kg (1388.9 lbs)

● Rear panel

PCR6000LE2

PCR9000LE2

PCR27000LE2

specifications

Item/Model			PCR6000LE2			PCR9000LE2	
Input ratings (AC rms)			1P2W	3P3W200V	3P4W400V	3P3W200V	3P4W400V
Voltage			Line voltage 170 V to 250 V		Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)	Line voltage 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-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)							
Phase 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 phase3-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 *9			1 Hz to 999.9 Hz ★				
DC mode output ratings, AC+DC mode (for Single-phase and Single-phase Three-wire output only)							
Phase 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) *10			± (0.05 % of set + 0.05 V / 0.1 V)				
Max. current*4	Single phase, Single phase 3-wire and Three-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*11			Max. current (rms) × 3.6				
Power capacity	Single phase, Single phase 3-wire, Three-phase		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 %				
Line regulation(With respect to 0 % to 100 % changes in the rating)*12			±0.3 V				
Output frequency variation in AC mode(Between 40 Hz and 999.9 Hz)*13			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)*14			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 ±5×10^{-5}, Setting accuracy : Within ±1×10^{-4}				
Output voltage waveform distortion ratio*15			0.3 % or less				
Output voltage response speed*16			30 µs (TYP)				
Efficiency*1			58 % or more				
Phase difference of the output phase voltage *17	Resolution		1 deg				
	Accuracy		Within ± (0.4° + f0×1.8×10^{-3}) deg f0 is the output frequency *18				
Meters (fluorescent display)							
Voltmeter *19 *20	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 *19 *20	Resolution	RMS,AVE Display mode Single phase · Poly phase	0.1A · 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*20	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*21	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 (308.6 lbs)			Approx.190kg (418.8 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 / 3 m	5.5 mm^2 / 3 m	14 mm^2 / 3 m	5.5 mm^2 / 3 m
Accessories	Setup guide		1 copy				
	Quick Reference		1 each for English and Japanese				
	Safety information		1 copy				
	CD-ROM(User's manual)		1 disc				
Other	Electromagnetic compatibility (EMC)		EMC Directive 2014/30/EU. EN61326-1. EN 55011 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, EN61010-1 (Class I, Pollution Degree2)				

*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. "Poly" 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 –90 deg to –180 deg / 90 deg to 180 deg out of phase with the output voltage).
*8 Resolution : 0.01Hz (1.00 Hz to 100.0 Hz), 0.1Hz(100.0 Hz to 999.9 Hz)
*9 The "500Hz Limit Model" limits the maximum frequency up to 500Hz under the "Three-phase output".
*10 With no load at room temperature
*11 Limited by the rated output current's rms value
*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. At the output terminal block. When the response mode is set to MEDIUM.(There is no F mode)
*13 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)
*14 When the output phase voltage is 100 V or 200 V and the output current is 0 A.
*15 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)
*16 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.
*17 Phase difference between output voltages (phase voltages) when each phase is considered along with the neutral point.
*18 The following show the angles obtained by calculating the expression with the specified frequency.
When phase difference is 120 deg.
Within 120 ± 0.5 deg(when generating 60 Hz output)
Within 120 ± 1.2 deg(when generating 400 Hz output)
*19 With the true rms display, a waveform with a crest factor of 3 or less.
*20 When the output frequency is between 45 Hz and 65 Hz.
*21 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 up to 500 Hz.

PCR12000LE2		PCR18000LE2		PCR27000LE2	
3P3W200V	3P4W400V	3P3W200V	3P4W400V	3P3W200V	3P4W400V
Line voltage 170 V to 250 V	Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)	Line voltage 170 V to 250 V	Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)	Line voltage 170 V to 250 V	Line voltage 324 V to 440 V (Phase voltage 187 V to 254 V)
Three phase 3-wire	Three phase 4-wire	Three phase 3-wire	Three phase 4-wire	Three phase 3-wire	Three phase 4-wire
47 Hz to 63 Hz					
Approx. 23 kVA		Approx. 33 kVA		Approx. 48 kVA	
0.97 (TYP)					
75 A or less	39 A or less	111 A or less	59 A or less	165 A or less	91 A or less
1 V to 150 V / 2 V to 300 V					
0 V to 152.5 V / 0 V to 305.0 V					
±(0.3 % of set + 0.6 V)					
120 A, 60 A · 40 A, 20 A		180 A, 90 A · 60 A, 30 A		270 A, 135 A · 90 A, 45 A	
Single phase · Single phase 3-wire · Three phase 4-wire					
12 kVA · 8 kVA		18 kVA · 12 kVA		27 kVA · 18 kVA	
Max. current (rms) × 4 (TYP)					
30 % of the max. current (rms)					
0 to 1 (leading or lagging)					
1 Hz to 999.9 Hz ★					
±1.4 V to ±212 V / ±2.8 V to ±424 V					
-215.5 V to +215.5 V / -431.0 V to +431.0 V					
± (0.05 % of set + 0.05 V / 0.1 V)					
84 A, 42 A · 28 A, 14 A		126 A, 63 A · 42 A, 21 A		189 A, 94.5 A · 63 A, 31.5 A	
Max. current (rms) × 3.6					
8.4 kW · 5.6 kW		12.6 kW · 8.4 kW		18.9 kW · 12.6 kW	
Within ±0.1 %					
±0.5 V					
Within ±1 %					
0.5 Vrms or less					
100 ppm/ °C (TYP)					
Within ±5×10^{-5}, Setting accuracy : Within ±1×10^{-4}					
0.5 % or less					
50 µs (TYP)					
58 % or more					
1 deg					
Within ± (0.4° + f0 × 1.8 × 10^{-3}) deg f0 is the output frequency *18					
0.1 V					
Within ± (1 % of rdng + 2 digits) (10 V to 848 V and at room temperature)					
0.1 A				0.1 A / 1 A · 0.1 A	
Within ± (1% of reading + 2digits) (5 % of the max. rated current to max. rated current and at room temperature)					
1 W / 10 W					
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.)					
0.01 Hz / 0.1 Hz					
500 V, 10 MΩ or more					
1.5 kVAC for 1 minute					
Linear amplifier system					
0 °C to +50 °C / -10 °C to +60 °C					
20 % rh to 80 % rh (no condensation) / 90 % rh or less (no condensation)					
Approx.350 kg (771.6 lbs)		Approx.480 kg (1058.2 lbs)		Approx.630 kg (1388.9 lbs)	
M8		M8		M8	
M8 · M8					
Required for the installation work, contact local distributor.					
1 copy					
1 each for English and Japanese					
1 copy					
1 disc					
—					
IEC 61010-1 (Class I, Pollution Degree2)					

specifications

Item/Model			PCR6000LE2	PCR9000LE2	PCR12000LE2	PCR18000LE2	PCR27000LE2
Limit Values and Protection Functions							
Voltage	AC voltage upper limit AC voltage lower limit		0.0 V to 305.0 V				
	DC voltage upper limit DC voltage lower limit		-431.0 V to +431.0 V				
	Output overvoltage protection AC/AC+DC mode		0.0 V to 474.1 V				
	Output overvoltage protection DC mode		-474.1 V to +474.1 V				
	Output undervoltage protection AC/AC+DC mode		0.0 V to 474.1 V				
	Output undervoltage protection DC mode		-474.1 V to +474.1 V				
	Resolution		0.1 V				
Frequency	Upper limit Lower limit		1 Hz to 999.9 Hz, 500 Hz LMT model: 1 Hz to 500 Hz (Three-phase output)				
	Resolution		0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 999.9 Hz)				
Current	Current limit *1 AC mode	Single-phase output	6.00 A to 66.00 A	9.00 A to 99.00 A	12.00 A to 132.0 A	18.00 A to 198.0 A	27.00 A to 297.0 A
		Single-phase three-wire output Three-phase output	2.00 A to 22.00A	3.00 A to 33.00 A	4.00 A to 44.00 A	6.00 A to 66.00 A	9.00 A to 99.00 A
	Current limit *1 DC/AC+DC mode	Single-phase output	4.20A to 46.20A	6.30 A to 69.30 A	8.40 A to 92.40 A	12.60 A to 138.6 A	18.90 A to 207.9 A
		Single-phase three-wire output Three-phase output	1.40A to 15.40A	2.10 A to 23.10 A	2.80 A to 30.80 A	4.20 A to 46.20 A	6.30 A to 69.30 A
	Positive peak current limit *2	Single-phase output	6.00A to 264.0A	9.00 A to 396.0 A	12.00 A to 528.0 A	18.00 A to 792.0 A	27.00 A to 1188 A
		Single-phase three-wire output Three-phase output	2.00A to 88.00A	3.00 A to 132.0 A	4.00 A to 176.0 A	6.00 A to 264.0 A	9.00 A to 396.0 A
	Negative peak current limit *2	Single-phase output	-6.00A to -264.0A	-9.00 A to -396.0 A	-12.00 A to -528.0 A	-18.00 A to -792.0 A	-27.00 A to -1188 A
		Single-phase three-wire output Three-phase output	-2.00A to -88.00A	-3.00 A to -132.0 A	-4.00 A to -176.0 A	-6.00 A to -264.0 A	-9.00 A to -396.0 A
	Resolution *3		0.01 A (0.35 A to 100.0 A) , 0.1A (100.0 A to 1000 A) , 1 A (1000 A to 1188 A)				

*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 current limit, whichever is less.
*3 You can set the current in 0.01 A/ 0.1 A/ 1 A steps, but it may not change at this resolution depending on the relationship with the internal D/A resolution.

ordering information

Part		Model	Remarks
High-performance AC Power Supplies (Single phase)		PCR500LE	Single phase 500 VA
		PCR1000LE	Single phase 1 kVA
		PCR2000LE	Single phase 2 kVA
		PCR3000LE	Single phase 3 kVA
		PCR4000LE	Single phase 4 kVA
		PCR6000LE	Single phase 6 kVA
		PCR9000LE	Single phase 9 kVA
High-performance AC Power Supplies (Single phase/Single phase three wire/Three-phase switchable type)		PCR6000LE2	Single phase / Three-phase 6 kVA, Single phase three wire 4 kVA
		PCR9000LE2	Single phase / Three-phase 9 kVA, Single phase three wire 6 kVA
		PCR12000LE2	Single phase / Three-phase 12 kVA, Single phase three wire 8 kVA
		PCR18000LE2	Single phase / Three-phase 18 kVA, Single phase three wire 12 kVA
		PCR27000LE2	Single phase / Three-phase 27 kVA, Single phase three wire 18 kVA
GPIB interface		IB05-PCR-LE	
USB interface		US05-PCR-LE	
LAN interface		LN05-PCR-LE	
Analog interface		EX05-PCR-LE	An amplifier type
		EX06-PCR-LE	Amplitude control type
Input power cable	For PCR1000LE	AC5.5-3P3M-M4C	3-core cabtire cables 5.5 mm^2/3 m M4
	For PCR2000LE	AC8-1P3M-M5C-3S	3 single-core cables 8 mm^2/3 m M5
	For PCR3000LE/6000LE	AC14-1P3M-M8C-3S	3 single-core cables 14 mm^2/3 m M8
	For PCR4000LE	AC22-1P3M-M8C-3S	3 single-core cables 22 mm^2/3 m M8
	For PCR6000LE (Three-phase 200V)/9000LE (Three-phase 200V)	AC14-1P3M-M5C-4S	4 single-core cables 14 mm^2/3 m M5
	For PCR6000LE (Three-phase 400V)/9000LE (Three-phase 400V)	AC5.5-1P3M-M5C-5S	5 single-core cables 5.5 mm^2/3 m M5
	For PCR6000LE2	AC14-1P3M-M8C-3S	3 single-core cables 14 mm^2/3 m M8
	For PCR6000LE2 (Three-phase 200V)/9000LE2 (Three-phase 200V)	AC14-1P3M-M5C-4S	4 single-core cables 14 mm^2/3 m M5
	For PCR6000LE2 (Three-phase 400V)/9000LE2 (Three-phase 400V)	AC5.5-1P3M-M5C-5S	5 single-core cables 5.5 mm^2/3 m M5
Extension cable for control panel		EC05-PCR	2 m
Parallel operation driver (Master)		PD05M-PCR-LE	Cannot be used with PCR500LE or PCR1000LE.
Parallel operation driver (Slave)		PD05S-PCR-LE	Cannot be used with PCR500LE or PCR1000LE.
Single-phase three-wire output driver		2P05-PCR-LE	
Three-phase output driver		3P05-PCR-LE	
		3P05-PCR-LE (500 Hz LMT)	Overseas export
Extension cable		CC01-PCR-LE	For 2P05 and 3P05, 1.5 m
		CC02-PCR-LE	For 2P05 and 3P05, 2.8 m
Extension connection cable (For parallel operation)		PC01-PCR-LE	1.3 m
Extension power signal cable (For parallel operation)		CC11-PCR-LE	1 m
Power-sync cable		LC01-PCR-LE	1 m
Rack mount Brakets	For PCR500LE	KRB4	For EIA inch size
		KRB200	For JIS metric size
	For PCR1000LE	KRB6	For EIA inch size
		KRB300	For JIS metric size
	For PCR2000LE	KRB9	For EIA inch size
		KRB400-PCR-LE	For JIS metric size
Base holding angle		OP03-KRC	For fixing PCR3000LE/4000LE/6000LE/9000LE/6000LE2/9000LE2 to the floor. Standard accessories for the PCR12000LE2/PCR18000LE2/PCR27000LE2.
IEC dip simulator		DSI1020	Single phase 20 A
		DSI3020	Single phase / Three-phase 20 A
		USB	
		GPIB	
Line impedance network		LIN1020JF	Single phase 20 A
		LIN3020JF	Single phase / Three-phase 20 A
		LIN3060J	Single phase / Three-phase 60 A exclusive for the JIS standard
		OP01-LIN1020JF	LIN1020JF for the "Three-phase" expansion
Quick Immunity Sequencer 2		SD009-PCR-LE/WE	
Software for creating sequences		SD011-PCR-LE (Wavy for PCR-LE)	
Avionics Test Software		SD012-PCR-LE/WE	
Remote control software for the Windows tablet		SD021-PCR-LE/WE	

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For our local sales distributors and representatives, please refer to "sales network" on our website.

● Distributor/Representative

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