

## Main specifications

1P: Single-phase input/output, 1P3W: Single-phase three-wire output, 3P: Three-phase output, 3P3W: Three-phase three-wire input, 3P4W: Three-phase four-wire input  
 TYP: Typical values that are representative of situations where the PCR-LE/PCR-LE2 Series operates in an environment with an ambient temperature of 23 °C.

Item	PCR 500LE	PCR 1000LE	PCR 2000LE	PCR 3000LE	PCR 4000LE	PCR 6000LE	PCR 9000LE	PCR 6000LE2	PCR 9000LE2	PCR 12000LE2	PCR 18000LE2	PCR 27000LE2	
Input ratings (AC rms)													
Voltage	1P	100 V input type: 85 Vac to 132 Vac, 200 V input type: 170 Vac to 250 Vac						170 Vac to 250 Vac		170 Vac to 250 Vac			
	3P3W	---						170 Vac to 250 Vac		---			
	3P4W	---						187 Vac to 250 Vac		(Phase voltage)			
Frequency	47 Hz to 63 Hz												
Apparent power	Approx. 0.93 kVA	Approx. 1.8 kVA	Approx. 3.6 kVA	Approx. 5.5 kVA	Approx. 7.3 kVA	Approx. 10.6 kVA	Approx. 15.7 kVA	Approx. 10.6 kVA	Approx. 15.7 kVA	Approx. 23 kVA	Approx. 33 kVA	Approx. 48 kVA	
AC mode output ratings (AC rms)													
Voltage	Output L range: 1 V to 150 V, Output H range: 2 V to 300 V												
	Resolution	0.1 V											
Maximum current(Output L range, H range) *1	1P	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	60 A, 30 A	90 A, 45 A	120 A, 60 A	180 A, 90 A	270 A, 135 A
	1P3W, 3P	---						20 A, 10 A	30 A, 15 A	40 A, 20 A	60 A, 30 A	90 A, 45 A	---
Power capacity	1P	500 VA	1 kVA	2 kVA	3 kVA	4 kVA	6 kVA	9 kVA	6 kVA	9 kVA	12 kVA	18 kVA	27 kVA
	1P3W	---						4 kVA	6 kVA	8 kVA	12 kVA	18 kVA	
	3P	---						6 kVA	9 kVA	12 kVA	18 kVA		
Maximum peak current	Max. current (rms) × 4 (TYP)*2												
Maximum reverse current *3	30 % of the max. current (rms)												
Frequency*1	1 Hz to 999.9 Hz*4												
	Resolution	0.01 Hz (1.00 Hz to 100.0 Hz), 0.1 Hz (100.0 Hz to 999.9 Hz)											

DC mode output ratings													
Voltage (output L range, H range)	1.4 V to 212 V, 2.8 V to 424 V												
	Resolution	0.1 V											
Maximum current(Output L range, H range)*5	1P	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	42 A, 21 A	63 A, 31.5 A	84 A, 42 A	126 A, 63 A	189 A, 94.5 A
	1P3W	---						14 A, 7 A	21 A, 10.5 A	28 A, 14 A	42 A, 21 A	63 A, 31.5 A	
Maximum instantaneous current	Max. current (rms) × 3.6 (Limited by the rated output current's rms value)												
Power capacity	1P	350 W	700 W	1.4 kW	2.1 kW	2.8 kW	4.2 kW	6.3 kW	4.2 kW	6.3 kW	8.4 kW	12.6 kW	18.9 kW
	1P3W	---						2.8 kW	4.2 kW	5.6 kW	8.4 kW		

Output voltage waveform distortion ratio, Output voltage response speed													
Output voltage waveform distortion ratio*6	FAST	0.2 % or less						---					
	MEDIUM	0.3 % or less						0.5 % or less					
Output voltage response speed *7	FAST	20 μs (TYP)						---					
	MEDIUM	30 μs (TYP)						50 μs (TYP)					

General												
Input terminal	Inlet	M4	M5	M8	M8	M8*8	M5	M8*8	M5	M8	M8	M8
Output terminal	M4	M4	M4	M5	M5	M8	M8	M8*9	M8*9	M8	M8	M8

\*1. When the output voltage is between 1 V and 100 V or 2 V and 200 V and the load power factor is between 0.8 and 1. When the output voltage is between 100 V and 150 V or 200 V and 300 V, 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. \*2. For capacitor-input rectifier loads, (at near the peak of the voltage waveform, excluding three-phase three-wire output). The peak current that can be output decreases in accordance with the reduction in the absolute value of the instantaneous output voltage. \*3. 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). \*4. 1 Hz to 500 Hz when a 3P05-PCR-LE (500HZ LMT) is installed in the PCR-LE and on the PCR-LE2 500HZ LMT model (during three-phase output). \*5. When the output voltage is between 100 V and 212 V or 200 V and 424 V, the output current is reduced by the output voltage. \*6. When the output voltage is between 80 V and 150 V or 160 V and 300 V and the load power factor is 1. \*7. 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. \*8. Three-phase three-wire or Three-phase four-wire input: M5 \*9. Single-phase three-wire or Three-phase input: M5

KIKUSUI Z1-006-102, IB027724  
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## PCR-LE PCR-LE2 Quick Reference

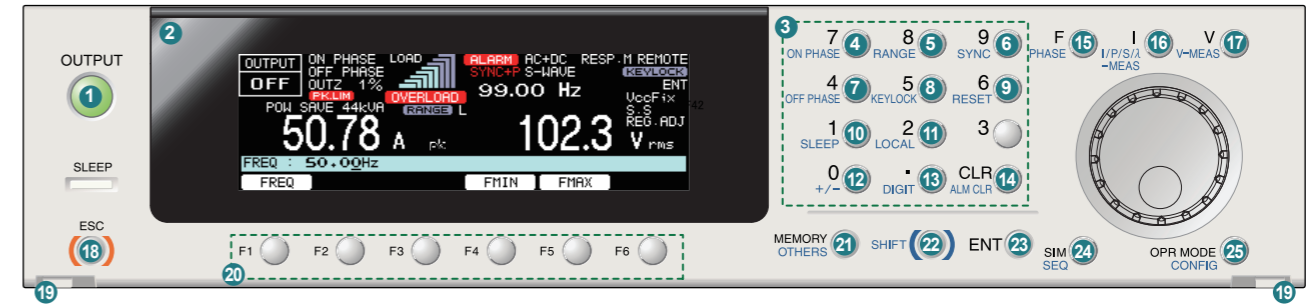


PCR-LE  
 manual



PCR-LE2  
 manual

The newest version of the operation manual can be downloaded from Kikusui website.  
<http://www.kikusui.co.jp/en>



Name	Function
1 OUTPUT key	Turn output on and off
2 Display	Display the settings/ measured value
3 Numeric keypad	Enter numeric values directly
4 ON PHASE key	Set the output on phase
5 RANGE key	Switch output voltage range
6 SYNC key	Set the synchronization function
7 OFF PHASE key	Set the output off phase
8 KEYLOCK key	Lock and unlock the keys
9 RESET key	Reset the product
10 SLEEP key	Set the sleep mode
11 LOCAL key	Switch between remote and local mode
12 +/- key	Switch the polarity of the voltage
13 DIGIT key	The cursor moves to the left
14 CLR key	Clear the numeric keypad input
14 ALM CLR key	Clear alarms
F key	Set the frequency
15 PHASE key	Switch different displays during multiphase operation (optional)

Name	Function
I key	Configure the current settings
16 I/P/A-MEAS key	Switch the current/power measurement mode
V key	Configure the voltage settings
17 V-MEAS key	Switch the voltage measurement mode
18 ESC key	Cancel operations
19 Detachment button	Detach the control panel
20 Function key	Correspond to the menus on display
21 MEMORY key	Save/Load settings from memory
21 OHTERS key	Configure advanced operation settings
22 SHIFT key	Enable the functions that are indicated in the bottom row to the left of each key
23 ENT key	Apply settings
24 SIM key	Configure power line abnormality simulations
24 SEQ key	Configure sequence operations
25 OPR MODE key	Configure the operation environment settings
25 CONFIG key	Specify the configuration settings

## Alarms/Trouble

When a protection function is activated, an alarm (ALM-xx) or a trouble indication (TRBL-xx) is generated, and the output is turned off.

Alarm: Press ALM CLR(SHIFT+CLR) to clear the alarm, and then fix the problem that caused the alarm.

Trouble: To clear the trouble indication, turn the POWER switch off, wait at least 5 seconds, and turn it back on. If the same trouble persists, contact your Kikusui agent or distributor to request repairs.

The accompanying CD-ROM describes the following information.

Two-phase output setting PCR-LE optional	External Analog Signals (Optional)
Voltage compensation function	Remote control
Harmonic current analysis function	Sequence tutorial
Generating special waveforms (waveform bank)	Options
Setting the output impedance	Troubleshooting
Setting soft starts (the voltage rise time)	Maintenance
Fixing the internal Vcc	Factory default settings
Selecting the response	Alarms/ Trouble
Controlling the Output Using	Specifications
	Table for power line abnormality simulation settings
	Table for sequence settings

## To turn the output on

### Single-phase output

#### 1. Set the Output Mode.

Press OPR MODE and then ACDC (F2) to select the output mode.

#### 2. Set the output voltage mode.

Press RANGE(SHIFT+8) to select the output voltage range.

You cannot set the mode if the output is turned on.

#### 3. Set the output voltage.

To set the AC voltage, press V and then ACVOLT(F1). To set the DC voltage, press V and then DCVOLT(F2).

#### 4. Set the frequency. (AC/ AC+DC mode only)

Press F and then FREQ(F1).

#### 5. Turn the OUTPUT on.

Press the OUTPUT key.

### Single-phase, three-wire output or Three-phase output (PCR-LE optional)

#### 1. Select the output method (PCR-LE2 only).

Press OPR MODE and then WIRING (F5). If you select single-phase, three-wire output, the output is generated from the OUTPUT 1P2W terminal block. If you select three-phase output, the output is generated from the OUTPUT 3P4W (1P3W) terminal block.

#### 2. Set the Output Mode.

Press OPR MODE and then ACDC (F2) to select the output mode.

#### 3. Set the output voltage range.

Press RANGE(SHIFT+8) to select the output voltage range. You cannot set the range if the output is turned on.

#### 4. Set the output voltage.

In AC+DC mode, the function key names are different. See "List of function keys."

##### Single-phase, three-wire output

##### Set the AC voltage with phase voltages

To set all the phases at the same time, press V and then PHAS VOLT (F1).

To set each phase separately, press U VOLT (F1) or V VOLT (F2). To set the phase difference, press UV PHASE (F4).

##### Set the DC voltage with phase voltages

Press V and then PHAS VOLT (F1). Then, specify one-half the voltage that is required for the line voltage. The V phase is set to the same amplitude as the U phase but with opposite polarity.

##### Set the output voltage with a line voltage

Press V and then LINE VOLT (F2). Then, set the voltage. Use phase voltages to set the DC voltage of AC+DC mode.

##### Three-phase output

##### Set the AC voltage with phase voltages

To set all the phases at the same time, press V and then PHAS VOLT (F1).

To set each phase separately, press U VOLT (F1), V VOLT (F2), or W VOLT(F3).

To set the phase difference, press UV PHASE (F4) or UW PHASE (F5).

##### Set the AC voltage with line voltages

Press V and then LINE VOLT(F2).

##### Set the DC voltage (AC+DC mode only)

To set all the phases at the same time, press V and then DC PH VOLT(F3).

To set each phase separately, press U DCVOLT(F1), V DCVOLT(F2), or W DCVOLT(F2).

#### 5. Set the frequency. (AC/ AC+DC mode only)

Press F and then FREQ(F1).

#### 6. Turn the OUTPUT on.

Press the OUTPUT key.

## List of function keys

Key	Standard function
Key	Standard function for the PCR-LE2, option for the PCR-LE
Key	Option

Some items may not be displayed depending on how the product is configured.

### V key

ACVOLT	AC voltage
DCVOLT	DC voltage
UV PHASE	U-V phase difference
UW PHASE	U-W phase difference
PHAS VOLT*1	Voltage of all the phases
U VOLT*1	Voltage of U phase
V VOLT*1	Voltage of V phase
W VOLT*1	Voltage of W phase
LINE VOLT*1	Line voltage
PROTECT	OVP Output overvoltage protection UVP Output undervoltage protection
VMAX	Voltage upper limit
VMIN	Voltage lower limit

\*1. Use the following soft keys when AC+DC is selected.

#### Setting of AC voltage

AC PH VOLT	Voltage of all the phases
U ACVOLT	Voltage of U phase
V ACVOLT	Voltage of V phase
W ACVOLT	Voltage of W phase
AC LIN VOLT	Line voltage

#### Setting of DC voltage

DC PH VOLT	Voltage of all the phases
U DCVOLT	Voltage of U phase
V DCVOLT	Voltage of V phase
W DCVOLT	Voltage of W phase

### F key

FREQ	Frequency
FMAX	Frequency upper limit
FMIN	Frequency lower limit

### I key

ILIMIT	Current limit
+IPKLIM	Positive peak limit
-IPKLIM	Negative peak limit
TRIP	Action to perform when the limit is exceeded
TRIP TIM	Time that elapses after the limit is exceeded until the output is turned off
OCP TIM	Time that elapses after the semiconductor protection function is activated until an alarm is generated

### V-MEAS (SHIFT+V) key

RMS	Displays the rms voltage
PEAK	Displays the peak voltage
AVE	Displays the average voltage
LINE	Switches between line voltage and phase voltage

### I/P/S/λ-MEAS (SHIFT+I) key

RMS	Displays the rms current
PEAK	Displays the peak current
AVE	Displays the average current
P	Displays the power
PKCLR	Clears the peak current
S	Displays the apparent power
λ	Displays the power factor
TOTAL P	Displays the total power
TOTAL S	Displays the apparent power
TOTAL λ	Displays the total power factor
IPK TIM	The hold time

### MEMORY key

RCL No.	Recalls settings from memory
STR No.	Stores settings in memory

### OTHER (SHIFT+MEMORY) key

RISSETIM	Soft start	
WAVE	WB No.	Number of the waveform bank to execute
EDIT	WB No.	Number of the waveform bank to edit
	SIN	Sine wave
	P.C	Crest factor
OUT IMP		Output impedance
FFT	ALL	All orders
	ODD	Odd-numbered orders
	EVEN	Even-numbered orders
	AMPER	Unit that is used to display the harmonic components
	PCT	
	U	Selects the U phase
	V	Selects the V phase
	W	Selects the W phase
VCC		Internal Vcc, fixed or automatic
COMPEN		Compensation function
RESP		Response
PON OUTP		Output status when the power is turned on
FILE	LOAD	Recalls settings from a USB memory device
	SAVE	Saves data to a USB memory device
APERTUR		Aperture time
EXT SIG	SOUR	Signal source (EX05-PCR-LE)
	POL	Polarity
VPROG		Signal source (EX06-PCR-LE)

### SLEEP (SHIFT+1) key

ON/ OFF	Sleep function
EXEC	Starts the sleep function instantly

### OFF PHASE (SHIFT+4) key

Output off phase control

### ON PHASE (SHIFT+7) key

Output on phase control

### RANGE (SHIFT+8) key

Output voltage range

### SYNC (SHIFT+9) key

ON/ OFF	Synchronization function
DELAY	Synchronization delay phase angle

### CONFIG (SHIFT+ OPR MODE) key

COM -I/F	TRACE	RS 232C	Error display
	TYPE	BAUDRATE	Baud rate
		DATABITS	Data length
		STOP BITS	Stop bits
		FLOW CTRL	Flow control
	GPIB ADDRESS		GPIB address
	USB		USB
	LAN	DHCP	LAN CONFIG display and DHCP function
		AUTO IP	LAN CONFIG display and automatic IP address assignment
		MANUAL IP	LAN CONFIG display and manual IP address assignment
SIG. I/O	TRIG.IN		Trigger input polarity
	TRIG.OUT		Trigger output polarity
	STAT.OUT		Status output polarity
DISPLAY	INTEN		Screen brightness adjustment
MODEL ID			Model information display
DATE TIM			Date and time
SURGE S			Voltage surge suppression
EXT. OPT	CONTROL	OUTP ON	Controlling the Output On/ Off
		SEQ RUN	Sequence execute/ stop
		ALMCLR	Alarm clear
		SHUT-DOWN	Shut down the output
		STAT.OUT	Selecting the phase to monitor

### PHASE (SHIFT+F) key

Switches the phase to display

### OPR MODE key

ACDC	Output voltage mode
POW SAV	Power-saving function
2P*1	Output mode
WIRING*2	Output mode

\*1. PCR-LE optional only

\*2. PCR-LE2 only

### SIM key

RUN	Execute	
STOP	Stop	
LOOP	Number of repetitions	
COND	POL	Voltage regulation polarity
	T1 TYPE	Voltage regulation starting setting type
	T5 TYPE	Return state hold setting type
EDIT	T1	Voltage regulation starting time or phase
	T2	Slope time 1
	T3	Voltage regulation time
	T4	Slope time 2
	T5	Return time or the number of return cycles
	T3 VOLT	Regulated voltage

### SEQ (SHIFT+SIM) key

RUN	Executes	
STOP	Stops	
PAUSE	Pauses	
CONTINUE	Unpauses	
LOOP	Number of repetitions	
COND	START STEP	Starting step number
	END STEP	Ending step number
EDIT	STEP	Step number
	FREQ	Frequency
	RAMP	Signal change
	ACVOLT	AC voltage
	RAMP	Signal change
	ACV V	AC voltage of V phase
	ACV W	AC voltage of W phase
	TIME	Time
	WB NO	Waveform bank number
	OUTPUT	Output
	DCV	DC voltage
	RAMP	Signal change
	DCV V	DC voltage of V phase
	DCV W	DC voltage of W phase
	STAT.OUT	Status output
	TRIG.OUT	Trigger output
	TRIG.IN	Trigger input (pause)
	TYPE	Step type
	JUMP STEP	Jump destination step
	JUMP CNT	Number of jump repetitions
	S.PHASE	Starting phase angle
	E.PHASE	Ending phase angle
	PHAS. CHG	Phase change
	OUT IMP.	Output impedance
	U PHA.OFFS	U phase offset
	RAMP	Signal change
	UV PHASE	U-V phase difference
	RAMP	Signal change
	UW PHASE	U-W phase difference
	RAMP	Signal change
U PHASE		Clears the U phase offset