Compact AC Power Supply
PCR-M Series

Compact AC power supply using the PWM inverter method
Output capacity: 500 VA, 1,000 VA and 2,000VA (single phase)
AC output: 1 V to 135 V/2 V to 270 V at 40 Hz to 500 Hz
DC output: ±1.4 V to 190 V/±2.8 V to 380 V
The maximum peak current triples the rated current (RMS value).
Equipped with measurement functions and various communication interface options.

KIKUSUI

Introducing a Compact AC Power Supply That is Ready to Use

The PCR-M series is a small-size AC power supply with the ease of a variable auto transformer or an automatic voltage regulator (AVR) and the usefulness of a multifunctional AC power supply. As the PWM inverter method is adopted for the power unit, the PCR-M series is much smaller and lighter than the predecessors while enabling high-quality and highly-efficient (about 70%) operation. This power supply comes with measurement features, memory feature, protection functions and various communication interface options, and it is even possible to provide DC power. When you incorporate an optional analog interface board (EX04-PCR-M), the PCR-M series can also be used as a booster for arbitrary signal generator. This small and versatile unit can provide you with more work styles than you can imagine. You can't do without it once you use it!

Compact design

Small enough to fit on your work desk!
Only 214W × 124H × 350D mm!
Weights only 6 kg and easy to carry! (PCR500M)

Neatly fits on your desk!
(Picture) Left: PCR500M Right: Electronic Load PLZ164W

Easy remote control with attached software!

Easy to carry with only one hand

Versatile output modes

Three modes (AC, DC, AC+DC) are available. *1
The frequency range is up to 500 Hz.

Memory function

You can store and recall three combinations of settings for voltage, frequency and limits for the output on the main unit. By calling the memory during output, you can test the sudden changes of voltage or frequency.*2

Measurement functions

You can measure the voltage, current and power of AC and DC output, apparent power, reactive power, power factor, crest factor and current peak hold.*3

Various communication interface options

RS-232C is provided as standard.
GPIB and USB are optional.

Analog interface

By incorporating an optional analog interface (EX04-PCR-M), output can be controlled by using external analog signals. Input DC signals can be used to change output AC voltage and boost input waveform.

PCR-M series

Compact AC Power Supply

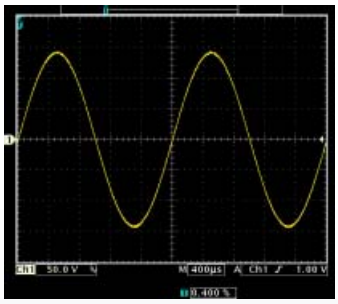
*1 You can access AC+DC mode if you have installed an optional interface board of IB21, US21 or EX04-PCR-M. The communications interface is used to set that mode.
*2 An installed appropriate optional interface board allows up to ten combinations of settings to be stored in the memory. The communications interface is also used to set or call extended memory addresses (4 to 10).
*3 You can use the communications interface to measure apparent power (VA), reactive power (VAR), power factor (PF), crest factor (CF), and peak hold current.

Compact design

The PCR-M series is characterized by much smaller size and lighter weight in comparison with the ac power supply based on the linear amplifier. For example, the very compact PCR-M series is reduced by a factor of 5 in terms of the volume and by a factor of about 4 in terms of the weight (in comparison with our past product). You can readily handle this product on your desk and easily carry it.

Output characteristics: AC mode

The output voltage varies from 1 V to 135 V or 2 V to 270 V (two ranges). You can switch ranges manually or automatically. The peak current can triple the maximum rated current for the rectifier load of the capacitor input type. The frequency varies from 40 Hz to 500 Hz, which is why the PCR500M is suitable as a power supply for aircrafts and ships that require 400 Hz and for driving actuators that require 250 Hz.



High-quality output waveform (distortion rate of output waveform is 0.5% or less)

Output characteristics: DC mode

The output voltage varies from ±1.4 V to 190 V or ±2.8 V to 380 V (two ranges). You can switch ranges manually or automatically. The maximum instantaneous current is up to three times higher than the maximum rated current. When an optional interface board is installed, the direct current can be superposed on the alternating current (AD + DC mode) *1

Input characteristics

The input voltage is from 100 V AC to 120 V AC or 200 V AC to 240 V AC at 50 Hz/60 Hz (single phase). The voltage is automatically determined when the power supply is turned on. The active filter enables the power factor to be 0.9 (TYP value) to reduce the input current and the harmonic current.

Measurement functions

The PCR-M series can measure the voltage, current, and power of AC and DC output. The device can display the true RMS and the average (DC) values for the output voltage, and the true RMS, peak and the average (DC) values for the output current. When a communication interface is used, the PCR-M series can measure the apparent power (VA), the reactive power (VAR), the power factor (PF), the crest factor (CF), and the peak hold current.

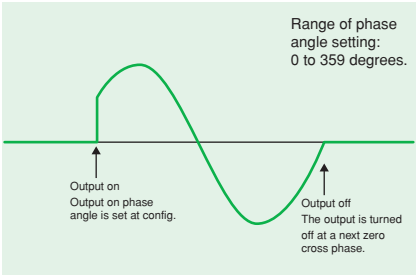
Protection

The following protection features are available:

- Protection against non-rated input voltage
- Protection against overheat (OHP)
- Protection against overload:
  Current limit (OCP)/monitoring for exceeded power (OPP)/monitoring for exceeded peak current
- Detection of voltage abnormalities:
  Increased voltage (OVP)/decreased voltage (LVP)

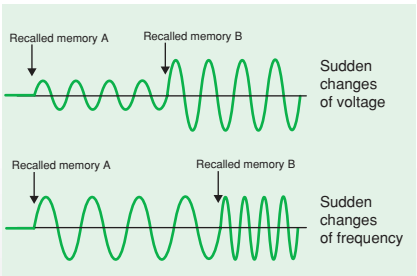
Output on phase angle

The output on phase angle can be set at AC mode. The output off phase angle is turned off at a zero cross phase.



Memory function

The PCR-M series can store three sets of setting value for output voltage and frequency, and limit value. By manually changing the preset memory during output, the test for sudden changes of voltage and frequency is also possible. When an optional interface board (IB21, US21 or EX04-PCR-M) is installed, the memory can store up to 10 settings. *2

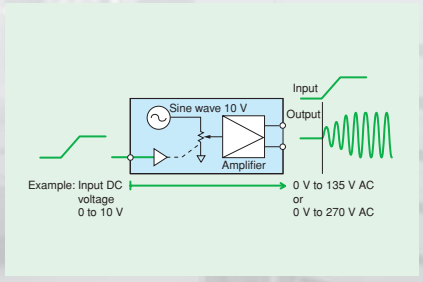


Analog interface

By using an optional analog interface board (EX04-PCR-M), you can control the output by external analog signals.

EXT-AC mode

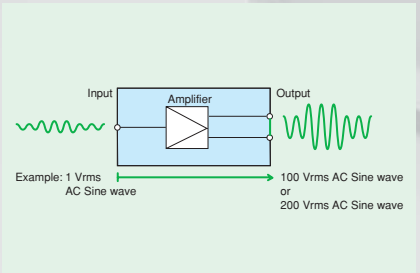
The voltage of the output alternating current can be changed based on the level input DC signal.



Voltage amplification rate: 13.5-times or 27-times

EXT-DC mode

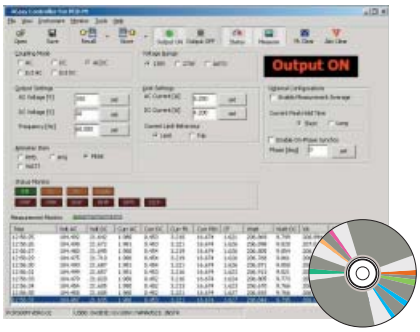
The input waveform is directly amplified and output.



Voltage amplification rate: 100-times or 200-times

Control using a PC

You can control the PCR-M series through the standard RS-232C interface, the optional GPIB interface, or the optional USB interface.* By using the control software (Easy Controller for PCR-M series) which comes with the PCR-M series, you can easily set the parameters of the PCR-M series and log the output measured values.



Operating environment for Easy Controller for PCR-M

- OS: Windows XP/2000/Me/98
- CPU: Pentium 233 MHz or greater
- Memory: At least 128 MB
- Driver: VISA library supporting VISA COM
- Interface: RS-232C, GPIB, or USB

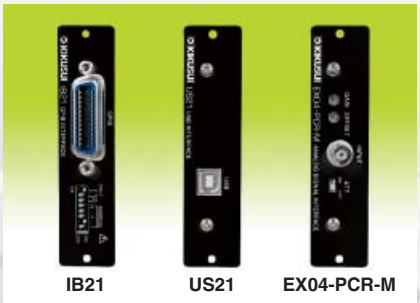
* Instrument drivers for Microsoft Visual Basic, Microsoft Office VBA, Microsoft Visual C++, LabVIEW, or LabWindows/CVI are also included in the disc.

Options

GPIB interface board: IB21

USB interface board: US21

Analog interface board: EX04-PCR-M



IB21 **US21** **EX04-PCR-M**

Note: Only one interface board can be installed.

Rack mount adapters

For the PCR500M
KRA150 (for millimeter specifications)
KRA3 (for inch specifications)

For the PCR1000M and PCR2000M
KRB150-TOS (for millimeter specifications)
KRB3-TOS (for inch specifications)

●Rear panel

PCR500M

PCR1000M

PCR2000M

Specifications

■ Specifications of the main unit

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

	PCR500M	PCR1000M	PCR2000M
Input voltage	Nominal rated input: 100 to 120 V AC/200 to 240 V AC, 50/60 Hz, single phase		
	Input voltage range: 90 to 132 V AC/180 to 250 V AC (automatically determined when the power is turned on), 47 to 63 Hz, single phase		
Input current	Up to 9 A/4.5 A	Up to 18 A/9 A	Up to 36A/18 A
Input power factor[*1]	0.9 (TYP value)		
Efficiency	At least 70%		
Output voltage	1 to 135 V AC/2 to 270 V AC (135 V/270 V range)		
	1.4 to 190 V DC/2.8 to 380 V DC (135 V/270 V range)		
Setting Resolution	0.1 V		
Output capacity	AC mode: 500 VA at maximum	AC mode: 1000 VA at maximum	AC mode: 2000 VA at maximum
	DC mode: 400 W at maximum	DC mode: 800 W at maximum	DC mode: 1600 W at maximum
Maximum current	AC mode: 5 A/2.5 A[*2]	AC mode: 10 A/5 A[*2]	AC mode: 20 A/10 A[*2]
	DC mode: 4 A/2 A[*3]	DC mode: 8 A/4 A[*3]	DC mode: 16 A/8 A[*3]
Output frequency	Range: 40 to 500 Hz, setting: 0.1 Hz, accuracy: $\pm 2 \times 10^{-4}$		
Output waveform distortion ratio	0.5% or less (at 50 V to 135 V/100 V to 270V at load power factor 1)		
Accuracy of voltmeter	±(0.5% of rdng + 0.3 V/0.6 V) (Output voltage greater than 13.5 V/27 V and output frequency 45 Hz to 65 Hz/DC at 23 ± 5°C)		
Accuracy of ammeter (RMS)	±(0.5% of rdng + 0.02 A/0.01 A)	±(0.5% of rdng + 0.04 A/0.02 A)	±(0.5% of rdng + 0.08 A/0.04 A)
	(5% to 100% of the maximum output current and output frequency 45 Hz to 65 Hz or DC at 23 ± 5°C)		
Dimensions (maximum)	214W × 124 (150)H × 350 (395)D mm	429 (450)W × 128 (150)H × 350 (400)D mm	429 (450)W × 128 (150)H × 450 (500)D mm
Weight	Approximately 6 kg	Approximately 11 kg	Approximately 15 kg
Operating temperature and humidity range	0 to 40°C, 20%rh to 80%rh (non-condensing)		
Storage temperature and humidity range	-10°C to 60°C, 90%rh or less (non-condensing)		

*1 When the output voltage is 100 V/200 V (in the 135 V/270 V range), the current is maximum, and the load power factor is 1.
*2 When the output voltage is 1 V to 100 V/2 V to 200 V. Depends on the power capacity when the output voltage is 100 V to 135 V/200 V to 270 V.
*3 When the output voltage is 1.4 V to 100 V/2.8 V to 200. Depends on the power capacity when the output voltage is 100 V to 190 V/200 V to 380 V.

■ Specifications of the communication interface

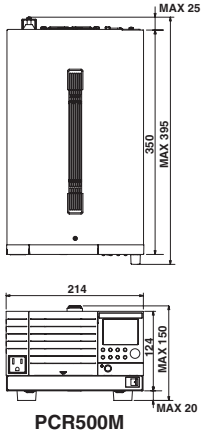
RS-232C	Conforms to EIA232D specifications. D-SUB9 pin connector. Baud rate: 1200, 2400, 4800, 9600, 19200 bps Data length: 8 bits, stop bit: 1 bit, no parity bit, X-Flow contorol
GPIB (IB21: optional)	Conforms to IEEE STD.488.1-1978 specifications. SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1
USB (US21: optional)	Conforms to USB 2.0 specifications. Conforms to USBTMC-USB488 device class specifications. Communication speed: 12 Mbps (full speed)
Common	Software protocol: IEEE 488.2 STD 1992 Command language: SCPI Specification 1999.0

■ Analog interface specifications (EX04-PCR-M: optional)

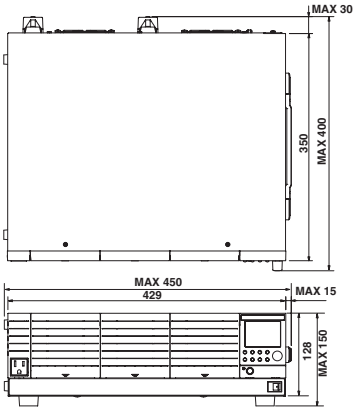
Input terminal	**Maximum allowable input voltage**		±15 V
	Type		BNC
	Input impedance		10 kΩ ± 5% (not unbalanced)
	Isolation voltage		±100 Vmax
EXT-AC mode[*1]	**Input voltage range**		0 V to ±10 V (DC)
	Voltage amplification rate (135 V/270 V range)		13.5 times or 27 times
	Frequency setting range		40 Hz to 500 Hz
EXT-DC mode	**Input voltage range**	ATT off	0 V to ±1.90 Vpeak (0 to 1.35 Vrms sine wave)
		ATT on	0 V to ±10 V (DC)
	Input frequency range	ATT off[*2]	40 Hz to 500 Hz (sine wave) /40 Hz to 100 Hz (square wave) /DC
	Frequency characteristics	ATT off	– 0.3 dB at 500 Hz with respect to 55 Hz (typical value)
	Voltage amplification rate (135 V/270 V range)	ATT off	100 times or 200 times
		ATT on	19 times or 38 times
Output voltage distortion ratio[*3]			Main unit specifications + 0.5% or less

*1 ATT is always set to on.
*2 Measurable range for voltage, current and power is DC and from 40 Hz to 500 Hz. The frequency is set based on the input waveform cycle.
*3 In the EXT-AC mode, when direct current is input. In the EXT-DC mode, when a sine wave with 0.1% or less distortion rate is input.

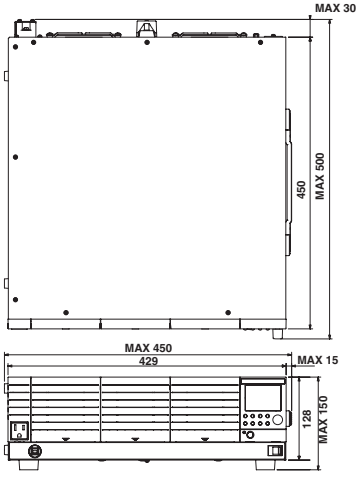
■ Dimensions (units: mm)



PCR500M



PCR1000M



PCR2000M

KIKUSUI ELECTRONICS CORPORATION
1-1-3, Higashiyamata, Tsuzuki-ku, Yokohama, 224-0023, Japan
Phone: (+81) 45-593-7570, Facsimile: (+81) 45-593-7571, www.kikusui.co.jp

KIKUSUI AMERICA, INC. 1-877-876-2807 www.kikusuiamerica.com
1633 Bayshore Highway, Suite 331, Burlingame, CA 94010
Phone : 650-259-5900 Facsimile : 650-259-5904

KIKUSUI TRADING (SHANGHAI) Co., Ltd. www.kikusui.cn
Room, D-01,11F, Majesty Bld, No.138, Pudong Ave, Shanghai City
Phone : 021-5887-9067 Facsimile : 021-5887-9069

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■Distributor:

Printed in Japan

Issue:May.2007 2007053KEMSEC41b