Regenerative DC Electronic Load
PLZ6000R

Not required for any special cooling system such as water cooling method
Voltage/current/power range: 30 V - 400 A / 60 V - 200 A / 6 kW
Power regeneration efficiency of up to 90% or more!
Six operation modes (CC/CR/CV/CP/CC+CV/CR+CV)
Easy-to-use design featuring a large-size LCD panel
Equipped with major interfaces (GPIB, RS232C, and USB) as standard

KIKUSUI

Regenerative Electronic Load

Environment-friendly DC electronic load of the power line regeneration type
Capable of regenerating power with clean current waveforms

Compact size
430 mm (W) × 173 mm (H) × 550 mm (D)
16.93 W × 6.81 H × 21.65 D inches

Power regeneration efficiency of up to 90%

Large capacity 6kW

Regenerative DC Electronic Load

PLZ6000R

PLZ6000R is a DC electronic load that regenerates load power to the AC line.
Regular electronic loads consume load power by having semiconductor devices convert it into heat.
By contrast, PLZ6000R converts load power into reusable electric power, rather than converting it into heat as is typically done, and feeds this power to the AC line, thereby substantially reducing the amount of waste energy. PLZ6000R is an environment-friendly electronic load that can contribute significantly to your energy saving efforts.

Applications

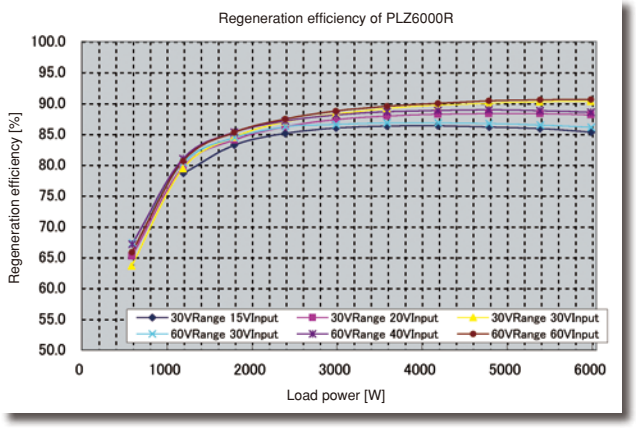
- **Aging and evaluation testing for DC/DC converters and various types of power supplies**
- **Evaluation and durability testing for alternators and motor generators**
- **Discharge testing for different types of batteries (lead, lithium, and assembled batteries)**
- **Dummy load testing for equipment powered by natural energy (solar cells and wind power generation)**
- **Evaluation testing for fuel cells and stacks**

[Note] This product is intended for in-plant power generation only. (It does not feed its generated power back to the electric power system.)
This product cannot be used unless 5.4 kW or more of power is consumed by each power distribution system per one unit.

Functions

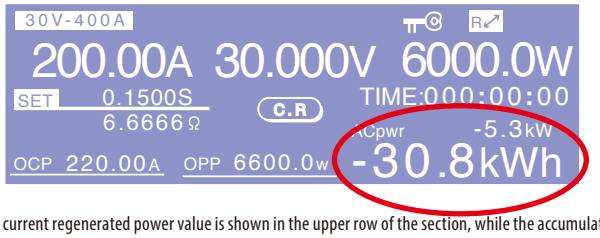
Power regeneration efficiency of up to 90 % (at rated power)

The use of a proprietary switching technology (patent pending) provides high power regeneration efficiency - from 85 % or more at one-third of rated power (2000 W) to a maximum of 90 % or more. This energy saving feature greatly reduces the electronic load's environment impact on your plant and it is not necessary to equip special cooling system such as water cooling method to supress the heat generation.



Regenerated power values recognizable at a glance!

The large-size LCD panel displays regenerated power values in real time. This makes the energy saving effect much easier to recognize.



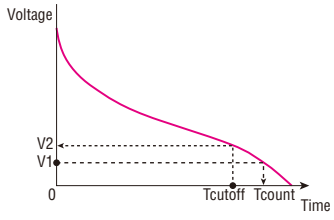
The current regenerated power value is shown in the upper row of the section, while the accumulated regenerated power value is presented in a larger font in the lower row. (The minus (-) sign indicates power regenerated.)

Auto load off timer function

This function automatically turns off the load current; it is useful for discharge tests of batteries and other devices.

• Measurement of the time elapsed from the start of discharge until the final voltage (UVP) is detected (elapsed time display)

• Measurement of the closed circuit voltage after the specified time elapses from the start of discharge (auto load off timer)



V2: Voltage after the specified time elapses
V1: Voltage when UVP is detected

Tcount: Elapsed time indicator (Count Time)
Tcutoff: Auto load off timer (Cut Off Time)

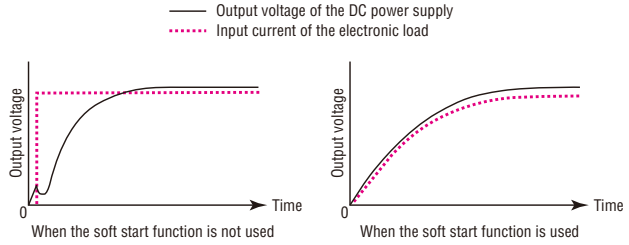
Parallel operation supporting up to 30 kW

A large-capacity system of up to 30 kW can be built using a parallel connection configuration with one control unit. (The system may consist of up to five units - one master unit and four slave units.)

Soft start function

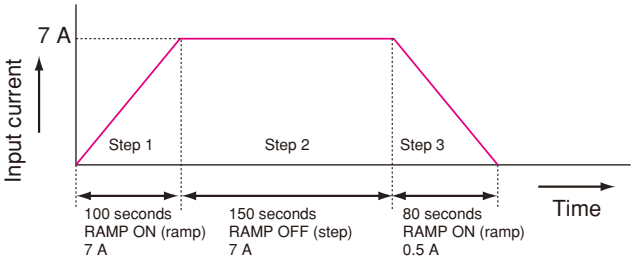
In constant current (CC) mode, this function causes the load current to rise gradually when the initial load is at 0 V while the load of the load unit is on or when the load of the load unit is turned on. It allows you to conduct tests under highly realistic load conditions.

[The soft start time can be selected from the following options - 20, 50, 100, and 200 ms.]



Sequence function

This function automatically executes arbitrarily set sequence patterns step by step (operation by operation). It enables various types of waveforms to be simulated. (A maximum of 10 programs can be created, each consisting of up to 256 steps. Operation modes, ranges, loop counts, etc. can be specified in these programs.)



ABC preset memories

Three preset memories A, B, and C are provided to store and read up to three different combinations of an operation mode, a range, and set values.

Equipped with major interfaces

GPIB, RS232C, and USB interfaces are equipped as standard, making it easy to integrate the electronic load into a variety of testing systems.

Support for these interfaces, coupled with the sequence function, allows you to build diverse types of system.

(The SCPI commands are adopted.)

Specifications

Rating		
Operating voltage (DC)	30 V range	3 V to 30 V
	60 V range	6 V to 60 V
Current	30 V range	400 A
	60 V range	200 A
Power	6000 W	

Constant Current (CC) mode		
Operating range	30 V range	0 A to 400 A
	60 V range	0 A to 200 A
Setting range	30 V range	0 A to 408 A
	60 V range	0 A to 204 A
Resolution	10 mA	
Setting accuracy	± (0.4% of set + 400 mA)	
Input voltage variation	400 mA	
Ripple	rms	500 mA
	p-p	2 A

Constant Resistance (CR) mode		
Operating range	30 V range	134 S to 2.5 mS (7.4627 mΩ to 400 Ω)
	60 V range	34 S to 2.5 mS (29.412 mΩ to 400 Ω)
Setting range	30 V range	136 S to 0 S (7.3529 mΩ to OPEN)
	60 V range	34 S to 0 S (29.412 mΩ to OPEN)
Setting accuracy	± (0.5% of set* + 2 A)	*set = Vin/Rset

Constant Voltage (CV) mode		
Operating range	30 V range	3 V to 30 V
	60 V range	6 V to 60 V
Setting range	30 V range	3 V to 31.5 V
	60 V range	6 V to 63 V
Resolution	1 mV	
Setting accuracy	± (0.1% of set + 60 mV)	
Input current variation	12 mV	

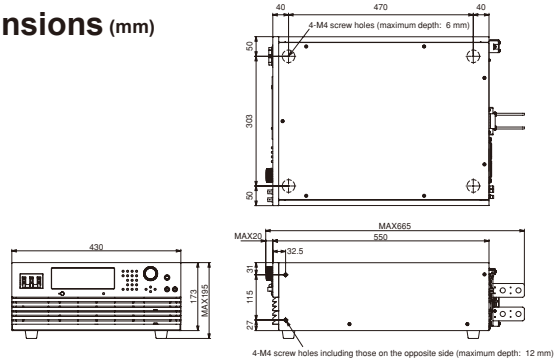
Constant Power (CP) mode	
Operating range	0 W to 6000 W
Setting range	0 W to 6300 W
Resolution	0.1 W
Setting accuracy	± (1% of set + 60 W)

Voltmeter	
Display	0.000 V to 60.000 V
Resolution	0.002 V
Accuracy	± (0.1 % of rdng + 60 mV)

Ammeter	
Display	0.00 A to 400.00 A
Resolution	0.01 A
Accuracy	± (0.3 % of rdng + 300 mA)

Wattmeter	
Display	0.0 W to 6000.0 W
Resolution	0.1 W

Dimensions (mm)



Protection function		
DC side	Over voltage protection (OVP), Over current protection (OCP), Over power protection (OPP), Over heat protection (OHP), Reverse connection protection (REV), Under voltage protection (UVP)	
AC side	Voltage range error (outside the 170 V to 240 V range)	
	Frequency range error (outside the 45 Hz to 65 Hz range)	
	Open phase (when one of the three phases is missing)	

Soft start	
Operation mode	CC mode
Selectable time range	20 ms, 50ms, 100 ms, 200 ms
Time accuracy	± (30 % of set + 100 µs)

Remote sensing	
Compensation voltage	2 V for a single line (The sensing line is switched by a relay.)

Sequence function	
Operation mode	CC, CR, CV, CP
Maximum number of steps	256
Step execution time	10 ms to 999 h 59 min
Resolution	10 ms to 1 min.

Other functions		
Elapsed time display	Measures the time from load on to load off. Can be set in the range of 1 s to 999 h 59 min 59 s or off.	
Auto load off timer	Automatically turns off the load after a specified time elapses. Can be set in the range of 1 s to 999 h 59 min 59 s or off.	
Communication interface	GPIB, RS232C, and USB interfaces are equipped as standard.	
External controls (J1 connector on the rear panel)	External voltage (0 V to 10 V): CC/CR/CP control	
	External voltage (0 V to 10 V): CV control	
	External resistance (0 Ω to 10 kΩ): CC/CR/CP control	
	External resistance (0 Ω to 10 kΩ): CV control	
	LOAD ON.OFF	TTL level signal
	Range selection	
	Mode selection	
	Preset memory A/B/C	
	Trigger input	Pause cancellation (TTL)
Monitor signal output	V MON (voltage)	5 V f.s (30 V range) /10 V f.s (60 V range)
	I MON (current)	10 V f.s (30 V range) /5 V f.s (60 V range)
Status signal output	LOAD ON status	On when the load is on.
	ALARM status	On when an alarm processing is in progress.
	RANGE status	On when the 30 V range is selected.
Trigger signal output	TRIG OUT; BNC terminal on the front side (approx. 4.5 V, 1 ms wide)	

General specifications	
Input voltage range	180 Vac to 220 Vac, Three phase three wires
Input frequency range	47 Hz to 63 Hz
Power consumption	200 VA (when no load is input)
Maximum regenerated power	5600 VA
Power regeneration efficiency	85 % or more
Dimensions (mm (inch))	430(16.93")W / 173(6.81")H / 550 (21.65")D
Weight	Approx. 43 kg (94.8 lbs.)
Accessories	Load input terminal screw, Input terminal cover, Lock plate, Lock plate fixed screws, J1/PARALLEL OUT/PARALLEL IN protection socket, Operation manual

Options

Description	Model name	Specification
Power cable	AC8-4P4M-M6C	3-phase, 4-core, 8mm^2-wide M6 cable
Parallel operation cable	PC01-PLZ-4W	Flat cable about 300 mm long
Rack mounting bracket	KRB4	EIA (inch)
	KRB200	JIS (millimeter)

KIKUSUI ELECTRONICS CORPORATION

Southwood 4F,6-1 Chigasaki-chuo,Tsuzuki-ku,Yokohama,224-0032,Japan

Phone: (+81)45-482-6353,Facsimile: (+81)45-482-6261,www.kikusui.co.jp

KIKUSUI AMERICA, INC. 1-310-214-0000 www.kikusuiamerica.com

3625 Del Amo Blvd, Suite 160, Torrance, CA 90503

Phone : 310-214-0000 Facsimile : 310-214-0014

KIKUSUI TRADING (SHANGHAI) Co., Ltd. www.kikusui.cn

Room 305,Shenggao Building , No.137,Xianxia Road, Shanghai City, China

Phone : 021-5887-9067 Facsimile : 021-5887-9069

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