

D C P O W E R S U P P L Y

Intelligent Bipolar Power Supply **PBZ Series**

4 models: PBZ20-20 (±20 V/±20 A), PBZ40-10 (±40 V/±10 A), PBZ60-6.7 (±60 V/±6.7 A) and PBZ80-5 (±80 V/±5 A) USB, GPIB, and RS232C provided (standard) LAN option available (complies with **LXI**)





New simulation power source for more realistic and

more flexible power reproductions!

A new product with 7 features for optimum testing!



- 1 User-defined waveform generation function
- Sequence function
- Synchronized operation function
- 4 Parallel operation function
- 5 Unipolar mode
- 6 High-speed response 100 kHz (CV)
- **7** Low ripple noise!

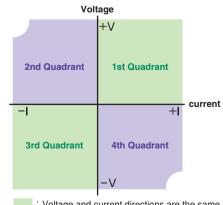
Intelligent Bipolar Power Supply PBZ series PBZ20-20 (±20 V/±20 A) PBZ60-6.7 (±60 V/±6.7 A) PBZ80-5 (±80 V/±5 A)

 USB, GPIB, and RS232C provided (standard) LAN (option)

The PBZ series is a series of bipolar DC stabilized power supply that can, without changing the output terminals, vary both the + and – polarity toward either side while continuously passing through zero. 4-quadrant operation allows power to be supplied (source) or absorbed (sink), making this series suitable for driving inductive loads or capacitive loads.

The power source contains a function generator (signal generating function), allowing free waveform generation and sequence settings. It also includes a synchronized operation function that is necessary for power fluctuation tests and a parallel operation function that expands the output current. The use of a Switching + Linear system makes this series 40 % lighter (weight is approximately 22 kg) than previous models from our company, while also achieving high-speed operation (CV mode: 100 kHz) with low ripple noise.

Four quadrants (bipolar) operation concept diagram



- : Voltage and current directions are the same (source)
- : Voltage and current directions are opposite (sink)





Waveform generation function

Built-in function generator! Easily create programs using user-defined waveforms!

In addition to the basic sine, square and triangular waveforms, the PBZ series is equipped with a user-defined waveform generating function that can register up to 16 waveforms.

It allows the amplitude, frequency, start phase, frequency sweep and square wave duty to be set as needed.

The 16 user-defined waveforms can be freely edited, and the original created and edited waveforms can be registered and easily recalled for use. The sequence function (see P4) allows each waveform to be set as a single step, and a maximum of 1024 steps can be set in the 16 pro-

* Waveform editing requires special application software (option: Wavy for PBZ). (See P11.)

3 basic waveforms



Sine wave



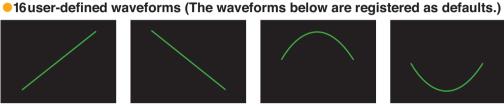
Ramp (rising)



Ramp (falling)



Sine wave, half-cycle (positive pole)



Sine wave, half-cycle (negative pole)



Triangular wave



Exponential function (rising)



Exponential function (falling)



Sine wave, half-wave rectification (positive polarity)



Sine wave, half-wave rectification (negative polarity)





Sine wave, full-wave rectification (positive polarity)



Sine wave, full-wave rectification (negative polarity)



Second order step response (damping coefficient 0.1)



Second order step response (damping coefficient 0.2)



Square wave



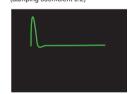
Second order step response (damping coefficient 0.7)



Second order impulse response (damping coefficient 0.1)



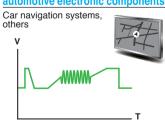
Second order impulse response (damping coefficient 0.2)



Second order impulse response (damping coefficient 0.7)

Expanded applications through free waveform generation

Power fluctuation test for automotive electronic components



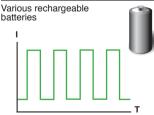
Ripple overlap test

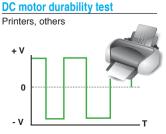
elements

Various electrical storage

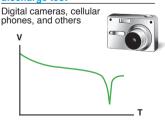
M/W/W

Rechargeable battery charge/ discharge test

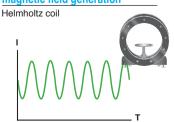




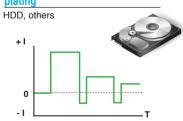
Simulated battery charge/ discharge test



Constant current source for magnetic field generation



Constant current source for pulse plating



Others

- Contact resistance test for breakers
- Characteristics test for solenoid valves, coils and others



Sequence function

The script function makes sequences even more convenient!

The basic sine, triangular and square waveforms, as well as the 16 user-defined waveforms, can each be set as a sequence step, allowing even complex sequences to be created easily. Sequences are composed of up to 1024 steps.

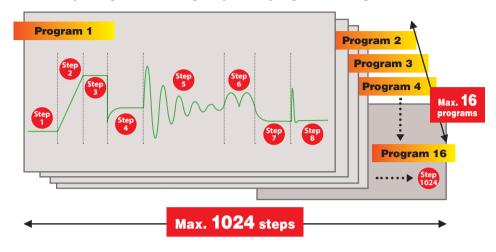
This combination of steps forms a program, and the 1024 steps can be allocated and set in a maximum of 16 programs.

When executing sequences, in addition to executing a single program, the script function also allows multiple programs to be combined and executed as needed.

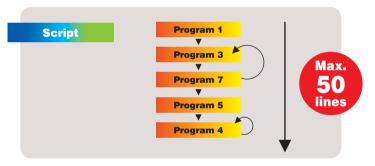
As shown in the figure on the right, when Program 1 uses 8 steps, 1024 - 8 = 1016, the remaining 1016 steps can be allocated to the remaining 15 programs.

A script is a function that specifies the sequence and number of repetitions for the set programs. A maximum of 50 lines can be set in 1 script. 1 script can be set each for CV and CC mode.

Concept diagram showing steps and program settings



Example of script

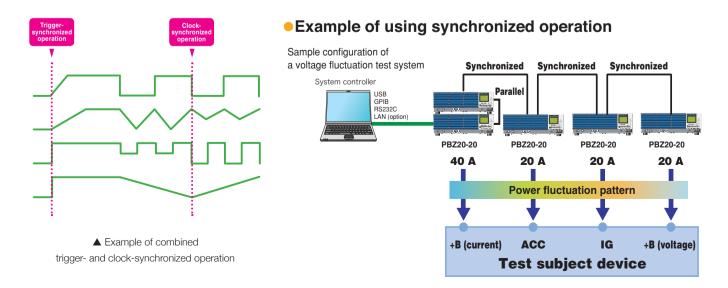


3

Synchronized operation function

No time deviations occur when a sequence is executed!

This function synchronizes the power output when a sequence is executed using multiple PBZ. It prevents time deviations from occurring even when a long sequence is executed. * A delay of up to 1µ s occurs at the start.







Parallel operation function

Easily expand the capacity

This function expands the output current. It allows multiple units to be connected in parallel according to the required current. With 2 standard units of the same model and the optional parallel operation kit, the user can easily complete the setup.

As for the system more than 3 units, please refer to the PBZ-SR Series (Page 12), and for the system more than 6 units, please contact with our local distributor.

■ Parallel operation kit (option)

The optional accessory kit for parallel system operation by connecting two units of the PBZ Series (same model). Select the type of kit for your installing condition.

*The bracket is not included for the PK02-PBZ or PK03-PBZ

• For Desktop use: PK01-PBZ

Contents of the Kit: Bracket, Insulating sheet, OUTPUT terminal connection bar, Parallel output terminal cover, Bracket screws (M4-8L), Spacer, Load wire screw (M5-10L), Parallel operation signal cable

For Rack-mounted system: PK02-PBZ (For EIA inch size)

Contents of the Kit: Insulating sheet, OUTPUT terminal connection bar, Load wire screw (M5-10L), Parallel operation signal cable

• For Rack-mounted system: PK03-PBZ (For JIS metric size)

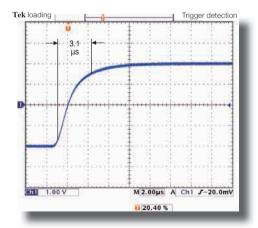
Contents of the Kit: Insulating sheet, OUTPUT terminal connection bar, Load wire screw (M5-10L), Parallel operation signal cable

6

High-speed response

100 kHz (CV mode)

100 kHz frequency characteristic (CV). The superior waveform quality with rise and fall with times of 3.5 μ s which makes it possible to reproduce a variety of waveforms with high precision.



▲ Sample of rising waveform

When response of 3.5 µs is set

6

Unipolar mode

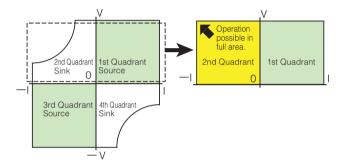
Operation in the full quadrant 2 area

This is a function unique to this product. Because the voltage is unipolar, this function is called "unipolar mode". With unipolar power, although the current flows in a single direction, in unipolar mode it is still possible to apply current in both directions (source and sink). As shown in the diagram, on a graph with perpendicular axes of voltage (vertical) and current (horizontal), operation is possible in quadrant 1st and 2nd quadrants (2 quadrants). In bipolar mode, there are power restriction areas (PBZ20-20: 100 W,

In bipolar mode, there are power restriction areas (PBZ20-20: 100 W, PBZ40-10: 180 W) in 2nd and 4th quadrants. However in unipolar mode, operation is possible in the full area of 2nd quadrants.

Bipolar mode (Four quadrants) Unipo

Unipolar mode (Two quadrants)

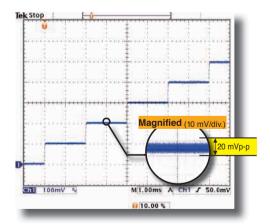


7

Low ripple noise

Superior waveform quality

The superior quality of the waveforms prevents the waveform quality from affecting the simulations or pulse-driven devices.



▲ Sample of actual 0.1 V step waveform

Ripple 2 mVrms, noise 20 mVp-p(PBZ20-20)

*PBZ40-10 :Ripple 4 mVrms, noise 20 mVp-p

PBZ60-6.7 :Ripple 4 mVrms, noise 30 mVp-p

PBZ80-5 :Ripple 4 mVrms, noise 30 mVp-p

40 % lighter than previous models

Weight: Approx. 22 kg. A large reduction in weight was achieved by using a Switching + Linear system. This contributes to improved workability not only on bench-tops, but also when test environments are moved

Expanded measurement functions

The built-in measurement functions allow testing without the multimeter and other measurement devices that were previously needed. In addition, the measurement time TRIG signal allows the measurement start and measurement start delay times to be set.

Setting item				
	DC	Measurement range (resolution)	120 % of rating (0.001 V)	
		Accuracy *1	±(0.05 % of reading + 0.05 % of rating)	
	AC	Measurement range (resolution)	120 % of rating/CF (0.001 V)	
\	DC + AC	Measurement range (resolution)	120 % of rating (0.001 V)	
Voltage measurement			±(0.5 % of reading + 0.1 % of rating) (5 Hz to 10 kHz)	
	AC, DC + AC	Accuracy *1, *2	±(1 % of reading + 0.2 % of rating) (10 Hz to 50 kHz)	
			±(2 % of reading + 0.2 % of rating) (50 Hz to 100 kHz)	
	PEAK	Measurement range (resolution)	120 % of rating (0.01 V)	
	PEAK	Accuracy *1, *3	±(0.5 % of rating)	
	DC	Measurement range	120 % of rating (0.001 A)	
	DC	Accuracy *1	±(0.3 % of reading + 0.1 % of rating)	
	AC	Measurement range (resolution)	120 % of rating/CF (0.001 A)	
Current	DC + AC	Measurement range (resolution)	120 % of rating (0.001 A)	
measurement	AC,	Accuracy *1, *2	±(3 % of reading + 0.1 % of rating) (5 Hz to 10 kHz)	
	DC + AC	Accuracy 1, 2	±(10 % of reading + 1 % of rating) (10 Hz to 100 kHz)	
	PEAK	Measurement range (resolution)	120 % of rating (0.01 A)	
	PEAK	Accuracy *1, *3	±(0.5 % of rating)	
Measurement	time		100 μs to 3600 s	

At ambient temperature of 18 °C to 28 °C

Memory functions

Preset memory

Stores the setting conditions that are most often used. Three memory positions are available each for CV mode and CC mode. The items that are stored are limited to the DC signal and AC signal.

Setup memory

This can be used as ordinary memory. It can store all of the basic setting items.

The total number of available memory positions is 10, regardless of the mode

CC/CV selection function

When using as a constant-voltage power source, select CV mode. When using as a constant-current power source, select CC mode. The voltage and current upper/lower limits utilize a "V" or "I" limit function.

Response switching

In both CV and CC mode, the 4 ranges can be switched. The output voltage and current rise/fall times vary according to the response setting.(The response time setting indicates the rise/fall time.)

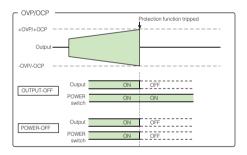
Catting	CV mode	CC mode				
Setting description	Voltage		Current r	response		
description	response	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5	
	3.5 µs	35 µs	70 µs	35 µs	35 µs	
Selectable	10 µs	100 µs	100 µs	100 µs	100 µs	
values	35 µs	350 µs	350 µs	350 µs	350 µs	
	100 µs	1 ms	1 ms	1 ms	1 ms	
Factory default setting	3.5 µs	35 µs	70 µs	35 µs	35 µs	

Protection functions (overvoltage, overcurrent, V-I LIMIT, overheating)

Overvoltage and overcurrent protection

This protection activates if the output voltage or current exceeds the protection trip point. The protection trip point can be set separately for the positive (+) and negative (-) sides. The following 3 operating types can be selected for the both the overvoltage and overcurrent operation protection functions.

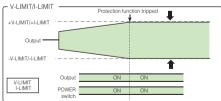
- ▶ OUTPUT-OFF setting: Output is turned OFF.
- ▶ POWER-OFF setting: Output is turned OFF and the POWER switch is also turned OFF.



▶ V/I-LIMIT

Prevents voltage and current exceeding the protection trip points. (Output is not turned OFF.)

The V/I-LIMIT function can be used to automatically change the unit from CV mode to I-LIMIT, and from CC mode to V-LIMIT. This allows the unit to be used as a power source that changes automatically from CV mode to CC mode, and from CC mode to CV mode.



Overheating protection

This protection activates when the temperature inside the product is abnormally high.

It protects the product when it is used in an environment that exceeds the ambient temperature range for operation, or when sufficient space has not been secured around the intake and exhaust ports.

^{*2.} When the input signal is a sine wave with a crest factor of 3 or less within the prescribed frequency range and

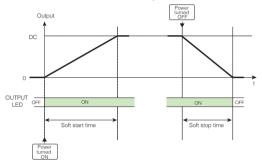
the measurement time is no more than 10 times the period of the input signal *3. Peak value of a 1 kHz sine



Soft start and soft stop function

With soft start, when output is changed from OFF to ON, a soft-start time is applied at startup from when output is 0 to when the DC set value is reached. With soft stop, when output is changed from ON to OFF, a soft-start time is applied at stop from when output is the DC setting to when the output reaches 0.

Soft start and stop times can be set only for the DC setting value. If the OUTPUT key is pressed while soft start or soft stop is operating, the operation is canceled and the output turns OFF.



Fine settings function

Fine adjustments (increase, decrease) can be made to the DC setting value

Input range

PBZ20-20

CV: DC setting value ±1.0000 V, resolution 0.0001 V CC: DC setting value ±1.0000 A, resolution 0.0001 A

PBZ40-10

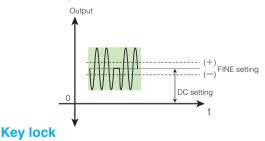
CV: DC setting value ±2.0000 V, resolution 0.0001 V CC: DC setting value ±0.5000 A, resolution 0.0001 A

PBZ60-6.7

CV: DC setting value ± 3.0000 V, resolution 0.0002 V CC: DC setting value ± 0.3350 A, resolution 0.0001 A

● PBZ80-5

CV: DC setting value ±4.0000 V, resolution 0.0002 V CC: DC setting value ±0.2500 A, resolution 0.0001 A



3 levels of key lock are available.

- All operations other than the OUTPUT key, RECALL key, and A, B, and C keys (preset memory) are prohibited.
- All operations other than the OUTPUT key are prohibited.
- All key operations are prohibited (except for the KEY LOCK (SHIFT + LOCAL) key)

Remote sensing function

Remote sensing is a function that stabilizes the load terminal output voltage by reducing the effects from problems such as voltage drops caused by the resistance of the load wires. It can be used in CV mode. One-way compensation of up to approximately 0.5 V can be made. Select load wires with sufficient current capacity, so that the load wire voltage drop does not exceed the compensation voltage.

Output voltage/current monitor

Voltage monitor
 Rear panel (J1 connector)
 0 to ±2 V from 0 V to ± rated voltage

Current monitorFront panel (BNC terminal)

0 to ± 2 V from 0 A to \pm rated current Frequency characteristics DC to 20 kHz (-3 dB)

Rear panel (J1 connector)

0 to ±2 V from 0 A to ± rated current

External control

● External output ON/OFF ● Shutdown

Status signal output

CV, CC, OUTPUT, and ALARM are output.

External signal input (external voltage control)

It is compatible with two types of input signals.

• The DC signal of the internal signal source can be controlled by external voltage at the rear panel (J1 connector) from DC control signal 0 to approximately ±10 V.

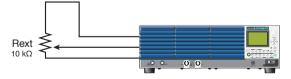


• Front panel EXT SIG IN (BNC terminal) input signal

This is composed of a bipolar amplifier that uses the EXT SIG IN (BNC terminal) as the input signal. The amplifier gain, polarity (inverted, non-inverted) and offset can be set. The maximum allowable input voltage is: ± 12 Vpeak, input impedance is: Approx. 10 $k\Omega,$ and common terminal is: connected to OUTPUT terminal COM.

External signal input (external resistance control)

Using an external variable resistor to change the standard voltage and voltage ratio can be used to control the DC signal of the internal signal source. In CV mode, the voltage can be controlled. In CC mode, the current can be controlled. The output is the sum of the setting at the external resistor, the DC setting at the panel, and the setting at the remote controller.



Temperature-sensitive fan motor

The internal temperature is detected in order to control fan operation.

Interface

USB, GPIB and RS232C provided (standard). For LAN (option), see P11.

Specifications

Unless specified otherwise, the specifications are for the following settings and conditions.

- The warm-up time is 30 minutes (with current flowing).
- TYP value: These are typical values that are representative of situations where the PBZ operates in an environment with an ambient

temperature of 23 °C. These values do not guarantee the performance of the PBZ.

· rating/CF: The rated voltage or rated current divided by CF (crest factor). · The polarity of the output voltage and current is defined as follows.

Voltage: Using the output's COM terminal as a reference, the voltage is positive (+) when the OUT terminal is positive and negative (-)

when the OUT terminal is negative.

Current: Positive (+) when current flows out from the OUT terminal and negative (-) when current flows into the OUT terminal.

• The output specifications apply to the rear panel output terminals under the following conditions:

The short bar is used to connect the output's COM terminal and chassis terminal.

Remote sensing is not being performed.

The auxiliary output terminals may not meet the specifications.

· Loads are purely resistive loads.

· Rated loads are defined as follows:

When the PBZ is generating its rated voltage, the load causes the rated current to flow.

Or, when the PBZ is generating its rated current, the load makes the voltage drop to the PBZ's rated voltage.

AC input, rated output		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Nominal input voltage	100 V to 240 V AC, 50/60 Hz						
	Voltage and frequency range		90 V to 250 V A	C, 47 Hz to 63 Hz				
A O ! 4	Current		10 A AC or les	ss (at rated load)				
AC input	Inrush current	40 Apeak or less						
	Power	900 VA or less (at rated load)						
	Power factor	0.95 (at input voltage 100 V, rated load) (TYP. value)						
	Output power	400) W	402 W	400 W			
Data da da da da	Output voltage	±20 V	±40 V	±60 V	±80 V			
	Output current	±20 A	±10 A	±6.7 A	±5 A			
	Voltage to ground	DC 500 V, grounding permitted at COM terminal only						

Constant voltac	ge (CV mode)		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
<u>-</u>		Bipolar mode	0.000 V to ±21.000 V	0.000 V to ±42.000 V	0.000 V to ±63.000 V	0.000 V to ±84.000 V		
	Setting range	Unipolar mode	0.000 V to 21.000 V	0.000 V to 42.000 V	0.000 V to 63.000 V	0.000 V to 84.000 V		
	'	Fine function		±5 %	of rating			
DC voltage	Setting resolut	tion	0.001 V (Fine function se	tting resolution 0.0001 V)	0.002 V (Fine function set	ting resolution 0.0002 V)		
	Setting accura	acy *2		±(0.05 % of setting	g + 0.05 % of rating)			
	Temp. coeffici	ent		±(100 ppm/°C of	rating) (TYP. value)			
	Setting range	*1	0.0 Vpp to 42.0 Vpp	0.0 Vpp to 84.0 Vpp	0.0 Vpp to 126.0 Vpp	0.0 Vpp to 168.0 Vpp		
AC voltage	Setting resolut	tion	0.01 V		0.1 V			
	Setting accura	acy *3		±0.5 %	of rating			
	Setting range		0.01 Hz to 100.00 kHz					
	Setting resolution		0.01 Hz					
AC frequency	Setting accuracy		±200 ppm					
	Sweep		Linear, log					
	Sweep time		100 μs to 1000 s (resolution 100 μs)					
	Туре		Sine wave, square wave, triangular wave, user-defined waves (16 waves)					
AC waveform	Start phase		0 ° to 359 °					
10 11410101111	Square wave	duty	0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz \leq f $<$ 1 kHz)					
	· ·	·	10 % to 90 % (1 kHz \leq f < 10 kHz), 50 % fixed (10 kHz \leq f)					
	Frequency cha				Hz (TYP. value)			
	Response *5,	*6			s, 100 µs (TYP. value)			
Constant voltage	Overshoot				s (TYP. value)			
characteristic	Ripple	(p-p) *7	20 mV (T	YP. value)	30 mV (T)	P. value)		
	Noise	(rms) *8	2 mV (TYP. value)	4 mV (TYP. value)	4 mV (TYP. value)	4 mV (TYP. value)		
	Load effect *9)		±(0.005 % of	setting + 1 mV)			
	Source effect	*10		±(0.005 % of	setting + 1 mV)			

- The combination of the DC voltage and AC voltage peak values is limited to within the DC voltage setting range
- *3.
- The combination of the DC voltage and AC voltage peak values is limited to within the DC voltage setting range. At ambient temperature of $18\,^{\circ}\mathrm{C}$ to $28\,^{\circ}\mathrm{C}$. At tambient temperature of $28\,^{\circ}\mathrm{C}$, 1 kHz sine wave, response $3.5\,\mu\mathrm{s}$, no load Frequency at which the amplitude ratio of the output voltage relative to the external signal input voltage is -3 dB (at standard frequency 1 kHz, response $3.5\,\mu\mathrm{s}$, rated load) Rise time / fall time (at rated load, excepting output ON/OFF) Frequency characteristic determined by the set response (frequency band = $0.35\,^{\circ}$ Rise time).
- *5.
- Rise time: When the output voltage is changed from 0 V to the rated voltage, the rise time is the time during which output voltage changes from 10 % to 90 % of the rated voltage.
- Fall time: When the output voltage is changed from the rated voltage to 0 V, the fall time is the time during which output voltage changes from 90 % to 10 % of the rated voltage. Measurement frequency band is 10 Hz to 20 MHz (at the output terminal).

- Measurement frequency band is 10 Hz to 1 MHz (at the output terminal).

 Change in output voltage (at sensing terminal using remote sensing) in response to a change from 0 % to 100 % of the rated output current
- *10. Change in output voltage (at sensing terminal using remote sensing) in response to a ±10 % change from the nominal input voltage

Constant curren	t (CC mode)		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Setting range	Bipolar mode Unipolar mode	0.000 A to ±21.000 A	0.000 A to ±10.500 A	0.000 A to ±7.035 A	0.000 A to ±5.250 A			
DC current	'	Fine function		±5 % of rating					
DC current	Setting resolution	on		0.001 A (Fine function se	tting resolution 0.0001 A)				
	Setting accuracy *2	y *2		±(0.3 %	of rating)				
	Temp. coefficier	nt		±(100 ppm/°C of r					
	Setting range *	1	0.0 App to 42.0 App	0.0 App to 21.0 App	0.0 App to 14.07 App	0.0 App to 10.5 App			
AC current	Setting resolution	on		0.0	1 A				
	Setting accurac	y *3		±0.5 % of rating					
	Setting range			0.01 Hz to	100.00 kHz				
	Setting resolution		0.01 Hz						
AC frequency	Setting accurac	у	±200 ppm						
	Sweep		Linear, log						
	Sweep time			100 µs to 1000 s	(resolution 100 μs)				
	Туре			Sine wave, square wave, triangular v					
AC waveform	Start phase		0 ° to 359 °						
710 Wavelollil	Square wave di	thy.	0.1 % to 99.0 % (f < 100 Hz), 1 % to 99 % (100 Hz \leq f < 1 kHz)						
	<u> </u>			10 % to 90 % (1 kHz ≤ f < 10					
	Frequency char	acteristic *4	DC to 10 kHz (TYP. value)	DC to 5 kHz (TYP. value)	DC to 10 kH	z (TYP. value)			
	Response		35 μs, 100 μs, 350 μs, 1 ms (TYP. value)	70 μs, 100 μs, 350 μs, 1 ms (TYP. value)		µs, 1 ms (TYP. value)			
Constant current	Overshoot			5 % or less	(TYP. value)				
characteristic	Ripple noise (rn	ns) *7		3 mA (TY	P. value)				
	Load effect *8			±(0.01 % of se					
	Source effect *9	9		±(0.01 % of se	etting + 1 mA)				

- The combination of the DC current and AC current peak values is limited to within the DC current setting range.
- At ambient temperature of 18 °C to 28 °C
- At ambient temp. 18 $^{\circ}$ C to 28 $^{\circ}$ C, 100 Hz sine wave, response 35 μ s, output short circuited Frequency at which the ratio of the external signal input amplitude and output current amplitude is -3 dB (at standard frequency 100 Hz, response 35 μ s, rated load) The frequency characteristic varies depending on the load impedance. When the load impedance increases, the frequency characteristic declines.
- Rise time / fall time (at rated load, excepting output ON/OFF) Rise/fall time varies depending on the load impedance.
- Rise time: When the output current is changed from 0 A to the rated current, this is the rise time is the time during which the output current changes from 10 % to 90 % of the rated current. Fall time: When the output current is changed from the rated current to 0 A, the fall time is the time during which the output current changes from 90 % to 10 % of the rated current.
- The measurement frequency band is 10 Hz to 1 MHz (at 10% to 100% of rated output voltage). Change in the output current in response to a voltage change from 10 % to 100 % of the rated output voltage. Change in the output current in response to a ±10 % fluctuation from the nominal input voltage (at 10 % to 100 % of the rated output voltage).



Intelligent Bipolar DC power supply

Measureme	ent display fu	unction	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
		Measurement range (resolution)	120 % of rating (0.001 V)					
	DC	Accuracy *1	±(0.05 % of reading + 0.05 % of rating)					
		Temp. coefficient		±(100 ppm/°C o	f rating) (TYP. value)			
	AC	Measurement range (resolution)		120 % of rati	ng/CF (0.001 V)			
Voltage mea-	DC + AC	Measurement range (resolution)		120 % of ra	ating (0.001 V)			
surement	AC.			±(0.5 % of reading + 0.1	% of rating) (5 Hz to 10 kHz)			
	DC + AC	Accuracy *1, *2		±(1 % of reading + 0.2 %	of rating) (10 kHz to 50 kHz)			
	20 1710		±(2% of reading + 0.2 % of rating) (50 kHz to 100 kHz)					
	PEAK	Measurement range (resolution)		120 % of r	ating (0.01 V)			
	PEAK	Accuracy *1, *3		±(0.5 %	of rating)			
		Measurement range (resolution)		120 % of ra	ating (0.001 A)			
	DC	Accuracy *1		±(0.3 % of reading	g + 0.1 % of rating)			
		Temp. coefficient		±(150 ppm/°C o	f rating) (TYP. value)			
	AC	Measurement range (resolution)		120 % of ration	ng/CF (0.001 A)			
Current mea- surement	DC + AC	Measurement range (resolution)		120 % of ra	ating (0.001 A)			
Surement	AC DC + AC	Accuracy *1, *2		±(3 % of reading + 0.1 %	6 of rating) (5 Hz to 10 kHz)			
	DC + AC	Accuracy 1, 2		±(10 % of reading + 1 % of	of rating) (10 kHz to 100 kHz)			
	PEAK	Measurement range (resolution)		120 % of r	ating (0.01 A)			
	PEAK	Accuracy *1, *3		±(0.5 %	of rating)			
Measurement	t time			100 µs	to 3600 s			

Protection functions		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5				
	Protection trip *1, *2	OVP or '	OVP or V-LIMIT (output restriction) For OVP, select either output OFF or POWER switch OFF.						
Overvoltage protection	Setting range (Bipolar mode)	(-	Select whether (-110 % of rtg \leq -V.LIM \leq +V.LIM \leq +110 % of rtg) or (-110 % of rtg \leq -0VP \leq -1 % of rtg, +1 % of rtg \leq +0VP \leq +110 % of rtg)						
Overvoitage protection	Setting range (Unipolar mode)	Select whether	-1 % of rtg \leq -V.LIM \leq +V.LIM \leq +1	10 % of rtg or +1 % of rtg ≤ +OVP ≤	≦ +110 % of rtg				
	Setting resolution		0.0)1 V					
	Setting accuracy		±1 % c	of rating					
	Protection trip *1, *2	OCP or I-LIMIT	(output limit). Select whether output of	or the POWER switch turns off when C	CP is activated.				
Overcurrent protection	Setting range	(-11 (-1	Select wheter (-110 % of rtg \leq -1.LIM \leq -1 % of rtg \leq +1.W of rtg \leq +1.LIM \leq +110 % of rtg) or (-110 % of rtg \leq -0CP \leq -1 % of rtg \leq +0CP \leq +110 % of rtg)						
	Setting resolution	0.01 A							
	Setting accuracy	±1 % of rating							
Overheating protection	Protection trip		Turns output off when	overheating is detected.					
Power restriction	Bipolar mode	100 W (TYP. value)	180 W (TYP. value)	200 W (T	YP. value)				
(Sink power)	Unipolar mode	400 W (T	YP. value)	402 W (TY.P value)	400 W (TYP. value)				
Control functions		PBZ20-20	PBZ40-10	PBZ60-6.7					
Internal signal source	Control voltage input		Approx 0 V to Approx. ±10.0 V	0 % to ±100 % of rated output					
DC signal control	Control voltage ratio input	0 % to ±108 % of rated voltage by changing the voltage ratio of the internal standard voltage, using 10 kΩ external resistance							
Output ON/OFF control in	nput	External contact input for output ON/OFF							
Shutdown input	·		External contact input for POWER switch OFF						
Status output	<u> </u>	CV mode, CC mode, output ON, alarm active							

^{*1.} Voltage is detected at the output terminal. *2. OVP is enabled even when V-LIMIT (voltage restriction) is selected. OVP operation point is approx. ±(120 % of rtg).

Signal I/O			PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
		CV mode	-20 to +20	-40 to +40	-60 to +60	-80 to +80		
	Amplifier gain	CC mode	-20 S to +20 S	-10 S to +10 S	-6.70 S to +6.70 S	-5 S to +5 S		
	Ampliller gain	Setting resolution	0.01 V (CV mode), 0.01 S (CC mode) 0.1 V (CV mode), 0.01 S (CC mode)					
External signal input		Setting accuracy *1		±5 % c	f rating			
	Max. allowable input v	roltage		±12 \	/peak			
	Input impedance			10 kΩ (T	/			
	Terminal			BNC Safety Socket (Common co				
	Output voltage			2 V at rate	ed current			
Current monitor Output	Output voltage accur	acy		±1 % of ratin	,			
Sarrone monitor Satpat	Output voltage frequ	ency characteristic		DC to	20 kHz			
	Terminal			BNC Safety Socket (Common co	onnects to output COM terminal.)			
	Input voltage			0.5 Vpp				
	Input impedance	,		1 kΩ (AC coup				
Clock input	Lock frequency rang	9	10 MHz ± 200 Hz					
	Lock time		2 s or less					
	Terminal		Insulated BNC (Common is insulated from chassis: Voltage to ground Max. 42 V peak)					
	Output voltage		1 Vpp (with 50 Ω terminal) (TYP. value)					
	Output impedance		50 Ω (AC coupled) (TYP. value)					
Clock output	Output frequency		10 MHz ± 200 Hz					
	Terminal		BNC (Common connected to chassis.)					
	Input level		H level: 2 V to 5 V, L level: 0 V to 0.8 V (TTL compatible)					
	Polarity		H level, L level					
Frigger input	Pulse width		1 µs or more					
ingger input	Delay		1 µs or less					
	Input impedance		10 kΩ (TYP value) (DC coupled)					
	Terminal	,		BNC (Common cor	nnected to chassis.)			
	Output level			H level: 2.7 V to 5 V, L level:	0 V to 0.4 V (TTL compatible)			
	Polarity			H level	, L level			
Frigger output	Pulse width			10 µs (T	P. value)			
mgger output	Rise/fall time			100 ns	or less	·		
	Fan-out			5 PBZ se	eries units			
	Terminal			BNC (Common cor	nnected to chassis.)			

^{*1.} With DC and amplifier gain at maximum

^{*1.} At ambient temperature of 18 °C to 28 °C
*2. When the input signal is a sine wave with a crest factor of 3 or less within the prescribed frequency range and the measurement time is the no more than 10 times the period of the input signal
*3. Peak value of a 1 kHz sine wave

Interface		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5				
Camman anasifications	Software protocol	IEEEStd 488.2-1992							
Common specifications	Command language		Conforms to SCPI Specification 1999.0.						
RS232C	Hardware		Baud rate: 1200, 2400, 4 Data length: 7 bits or 8 bits,	ons. D-SUB 9-pin connector (male) *1 300, 9600, 19200, 38400 bps Stop bit: 1 bit or 2 bits, No parity bi: X-Flow/None					
	Program message terminator		LF when receiving	, CR/LF when sending					
GPIB	Hardware	Conforms to IEEEStd 488.2-1987 specifications. SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1 24-pin connector (receptacle)							
	Program message terminator	LF or EOI when receiving, LF + EOI when sending							
	Primary address		1	to 30					
LIO.	Hardware	Conforms to USB 2.0 specifications. Communications speed: 12 Mbps (full speed) Socket B type							
USB	Program message terminator		LF or EOM when receiving	ng, LF + EOM when sending					
	Device class		Conforms to USBTMC-USE	488 device class specifications.					
	11		IEEE802.3 100Base-TX/10Base-	T Ethernet, IPv4, RJ-45 connector *2					
A	Hardware	Complies with the L	Complies with the LXI Class C, Specification 1.2 Complies with the LXI Class C, Specification						
LAN (factory option)	Communication protocol		V	XI-11					
	Program message terminator		LF or END when receiving	ng, LF + END when sending					

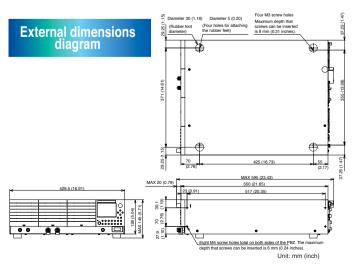
^{*1.} For the cable, use a crossing cable (null modem cable). *2. Use a category 5 straight type.

Other functions		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	No. of programs		16					
Sequence function	No. of steps		Total 1024					
	Step time		100 μs to 1000 H (100 μs step) *1					
Preset memory			3 me	emories				
Setup memory 10 memories								
Key lock			Select from	1 of 3 levels.				
Remote sensing			Function ON/OF	F, used in CV mode				
Operation setting at power O	N		Output ON, start sequ	uence function execution				
Soft start / soft stop				n ON/OFF ne 0.1 ms to 1000 s				
Parallel operation		Max. 2 units of same model (using optional parallel operation kit)						

^{*1.} Step time for DC rump, AC amplitude sweep, or Frequency sweep stops at 1000 s. To set a step time longer than 1000 s for those items, compose several steps every 1000 s.

General specifications		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
	Operating environment	Indoor use, overvoltage category II					
Environment	Operating temp./humidity range		0 to +40 °C / 20 to 85	% RH (no condensation)			
	Storage temp./humidity range		-25 to +70 °C / Max. 9	0 % RH (no condensation)			
Grounding polarity Only the output COM terminal can be grounded.							
Voltage to ground			DC 50	0 V Max.			
Withstand voltage	Between primary side and chassis		1500 V AO	normalities at 1 minute			
withstand voltage	Between primary side and output terminal		1500 V AC, no abr	iormailles at 1 minute			
	Between primary side and chassis		500 V DC 20 MO	(-t-b			
Insulation resistance	Between primary side and output terminal		500 V DC, 30 MΩ or more	(at humidity 70 % RH or less)			
	Between output terminal and chassis	•					
Ground continuity	Between power cord connector, grounding pin <-> chassis	25 A AC, 0.1 Ω or less					
Cooling method		Forced air cooling by a temperature-sensitive variable-speed fan					
Safety *1				wing safety requirement. s I Pollution degree2			
Electromagnetic compatil	bility (EMC) *1			wing safety requirement. i1326-1			
External dimensions (large	est part)		429.5 (16.91") W × 128 (5.0") (145 (5	i.7")) H × 550 (21.65") (595(23.4")) D mm			
Weight			Appro	ox. 22 kg			
Accessories		Power cord: 1 J1 connector (Socket: 1, Protective covers: 2, Terminals: 30) Heavy object warning label: 1 Instruction manual: 1					

^{*1.} Cannot be used for special-order or modified products.



Rear panel





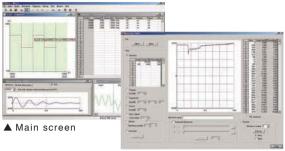
Wavy for PBZ

■ Sequence creation software "Wavy for PBZ"

[Operating environment] Windows Vista / Windows 7 / Windows 8

*For details, please see our company's homepage.

This software further strengthens the waveform generation and sequence functions of the PBZ series. Create and edit in two ways: either by drawing with the mouse or spreadsheet style.



▲ User-defined waveform edit screen

- This software allows easy creation and editing of the test condition data that is necessary for sequence operation.
- The function for saving test condition data files makes it easy to manage the conditions for standardized tests.
- The course of the execution sequence is displayed with the set values and cursor on the "Execution graph".
- An intuitive and actual output can be monitor on the "Monitor graph", which plots the monitor values during sequence execution.
- The acquired monitor data can be saved as test results
- A new "Waveform image" window has been added. This window makes it easy to understand the AC signal waveform.
- User-defined waveforms can be easily created and selected. The created user-defined waveform can be quickly
 written and output.
- Supports selection/deselection of sequence step items. A pause function, trigger function, AC waveform and other items can be selected as necessary.
- Data from Wavy for PBX can be loaded (upward compatibility).

■ Communication interface

LAN

In addition to IEEE488.2, this series is also compatible with SCPI commands. Using the instrument drivers (downloaded from our website) allows control with Excel VBA and LabVIEW, as well as sequence control with the sequence creation software Wavy (Wavy for PBZ). By using the LAN interface, power control and monitoring from a web browser is also possible.



Vertical Stand



*Not included with the PBZ series main unit.

- Rack-mounting bracket
- KRB3-TOS (For EIA inch size)
- KRB150-TOS (For JIS metric size)

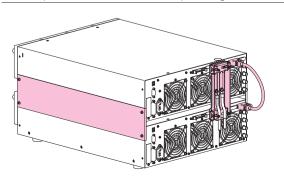
■ Parallel operation kit

- PK01-PBZ
- PK02-PBZ (For EIA inch size)
- PK03-PBZ (For JIS metric size)

Parallel operation kit components

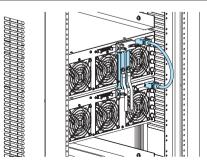
Parallel operation kit PK01-PBZ (option) components

Component	Qty.	Component	Qty.
Brackets	2	Bracket screws (M4-8L)	8
Insulating sheet	1	Spacers	4
OUTPUT terminal connection bars	2	Load wire screws (M5-10L)	2
Parallel output terminal cover	1	Parallel operation signal cable	e 1



Parallel operation kit PK02-PBZ (For EIA inch size, option), PK03-PBZ (For JIS metric size, option) components

Component	Qty.	Component	Qty.
Insulating sheet	1	Load wire screws (M5-10L)	2
OUTPUT terminal connection b	ars 2	Parallel operation signal cab	le 1



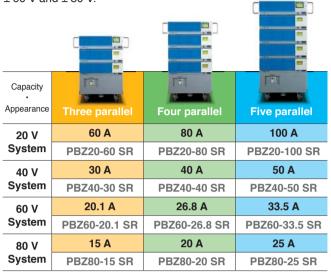
Rack mount bracket KRB3-TOS or KRB150-TOS is required.

Intelligent Bipolar DC power supply

line-up

PBZ SR Series line-up

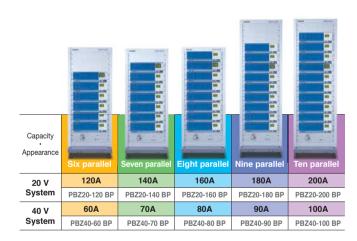
Available in total of 12 models with up to 2 kW of the maximum output power in 4 types of output voltage, ± 20 V and ± 40 V and ± 60 V and ± 80 V.



^{*}If the parallel operation system required more than 6 units, please contact with our local distributor

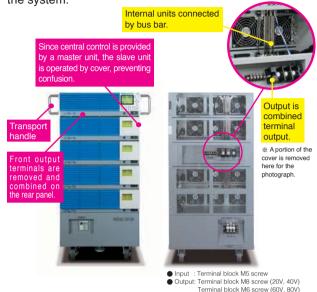
PBZ BP Series line-up

Available in total of 10 models with up to 4kW of the maximum output power in 2 types of output voltage, \pm 20 V and \pm 40 V.



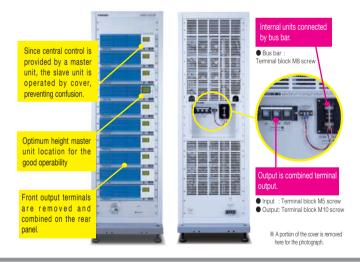
appearance

The Smart Rack package offers the safety and easy to use. with adopting the know-how of which details can be found in the system.



The Bipolar Pack package offers the safety and easy to use, with adopting the know-how of which details can be found in the system.

Terminal block M6 screw (60V, 80V)





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Specifications, design and so forth are subject to change without prior notice to improve the quality.

Product names and prices are subject to change and production may be discontinued when necessary. brand names contained in this catalogue represent the respective registered trade name or trade mark.

Colors braid interest contained in this catalogue represent the respective registered trade final as of the first trade final. So considered trade final as a contained of the first trade final. So considered the first trade final as a contained final fi catalogue, it would be appreciated if you would inform us. Please contact our distributors to confirm specifications price, accessories or anything that may be unclear when placing an order or concluding a purchasing agreement.



Realizing the Large-Scale system of the high power Bipolar Power Supply!



PBZ20-120 BP PBZ40-60 BP PBZ20-140 BP PBZ40-70 BP PBZ20-160 BP PBZ40-80 BP PBZ20-180 BP PBZ40-90 BP PBZ20-200 BP PBZ40-100 BP High Power Intelligent Bipolar Power Supply

PBZ SR/BP SERIES

- * The SR model name is an abbreviation for "Smart Rack."
- * The BP model name is an abbreviation for "Bipolar Pack."



PBZ SR SERIES

PBZ20-60 SR PBZ40-30 SR PBZ20-80 SR PBZ40-40 SR PBZ20-100 SR PBZ40-50 SR PBZ60-20.1 SR PBZ80-15 SR PBZ60-26.8 SR PBZ80-20 SR PBZ60-33.5 SR PBZ80-25 SR

High Power Intelligent Bipolar Power Supply High-speed response even with high power

PBZ SR Series

• The PBZ SR series is a series of high-power bipolar DC stabilized power supplies. The PBZ SR series is designed based on the PBZ Intelligent Bipolar power supply series, that supports large currents (up to ±100 A) and is assembled with exclusive rack system (Smart Rack).

PBZ BP Series

● The PBZ BP series is a series of high-power bipolar DC stabilized power supplies. The PBZ BP series is designed based on the PBZ Intelligent Bipolar power supply series, that supports large currents (up to ±200 A) and is assembled with exclusive rack system (Bipolar



▲ PBZ-BP Series

The 4-quadrant operation allows the power to be supplied (source) or absorbed (sink), and it is suitable for driving inductive loads or capacitive loads.

Also, the PBZ SR series is equipped with LAN, USB, GPIB. and RS232C as standard communication interfaces.

- User-defined waveform generation function
- Sequence function
- Synchronized operation function
- Central control with the master unit utilizing master and slave operation
- Displays the total output current of all units on the master unit (display of combined value) *1
- Safety design that switches all units off whenever the alarm is occurred on any unit of the system *2
- Guarantee of specifications with Smart Rack (test data standardly included)
- Equipped with LAN (Supports of LXI), USB, GPIB, and RS232C, as standard interface.



Support for Large Current

20V/**100**A 40V/50A

60V/33.5A

80V/25A

*2 If the alarm for the master unit is cleared, alarms for all units are cleared.

▲ PBZ-SR Series

Four quadrants (bipolar)

Voltage

1st Quadrant

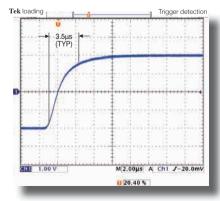
4th Quadran

Voltage and current directions are the same (source)

: Voltage and current directions are opposite (sink)

High-speed response(Voltage)

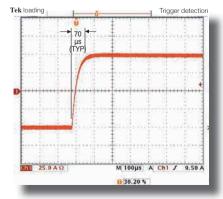
100 kHz frequency characteristic (CV). The superior waveform quality with rise and fall times of 3.5 μ s which makes it possible to reproduce a variety of waveforms with high precision.



 Sample of rising waveform When response of 3.5 µs is set

High-speed response(Current)

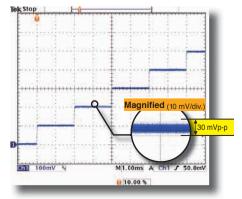
5 kHz frequency characteristic (CV). The superior waveform quality with rise and fall times of 70 μ s which makes it possible to reproduce a variety of waveforms with high precision



Sample of rising waveform When response of 70 µs is set

Low ripple noise

The superior quality of the waveforms prevents the waveform quality from affecting the simulations or pulse-driven devices.



▲ Sample of actual 0.1 V step waveform Ripple 6 mVrms, noise 30 mVp-p (TYP)

line-up

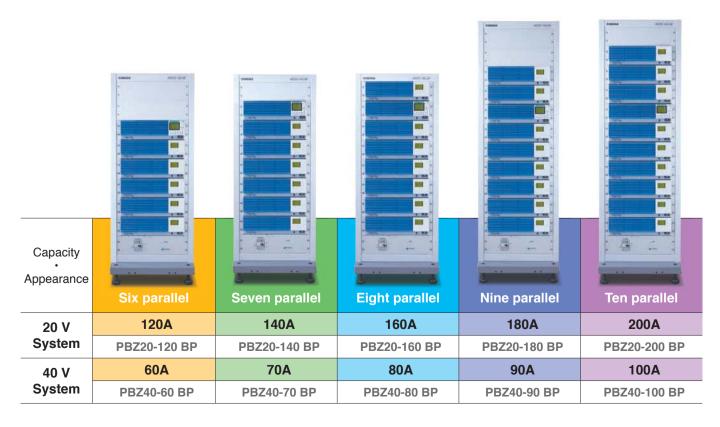
PBZ SR Series line-up

Available in total of 12 models with up to 2 kW of the maximum output power in 4 types of output voltage, \pm 20 V and \pm 40 V and \pm 60 V and \pm 80 V.

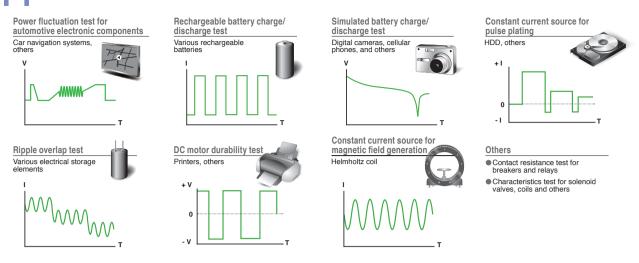
Capacity • Appearance	Three parallel	Four parallel	Five parallel
20 V	60 A	80 A	100 A
System	PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR
40 V	30 A	40 A	50 A
System	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR
60 V	20.1 A	26.8 A	33.5 A
System	PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR
80 V	15 A	20 A	25 A
System	PBZ80-15 SR	PBZ80-20 SR	PBZ80-25 SR

PBZ BP Series line-up

Available in total of 10 models with up to 4kW of the maximum output power in 2 types of output voltage, \pm 20 V and \pm 40 V.



applications Expanded applications through the user-defined waveform generation



appearance

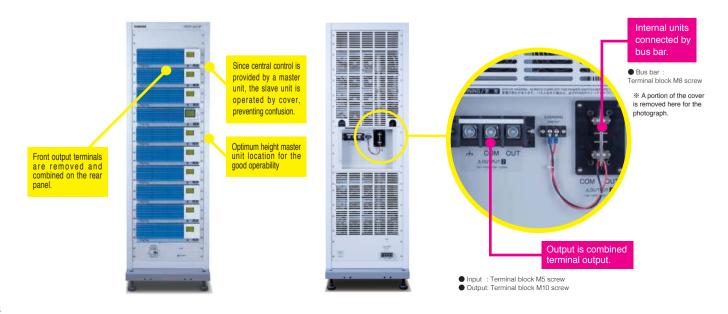
PBZ SR Series

The Smart Rack package offers the safety and easy to use, with adopting the know-how of which details can be found in the system.



PBZ BP Series

The Bipolar Pack package offers the safety and easy to use, with adopting the know-how of which details can be found in the system.



Application software

Supporting Kikusui power supplies and electronic loads more intelligently!

Expanding the ideas of engineers "Wavy" sequence creation software

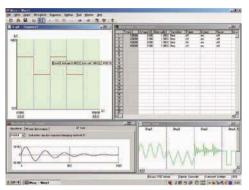
Wavy for PBZ

Sequence creation software "Wavy for PBZ"

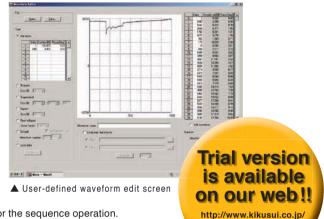
[Operating environment] Windows Vista / Windows 7 / Windows 8

*For details, please see our company's homepage.

The "Wavy" is an application software that supports sequence creation and the operation for the Kikusui power supplies and electronic loads. Even a person without any programming knowledge can freely control the sequencing of power supplies and electronic loads. Sequences can easily be created, just like drawing a picture or with the feel of a spreadsheet.



▲ Main screen



- It makes easier for creation or editing 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 "execution graph" 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 kept 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".

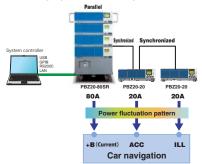
Example of Wavy use ~ Automotive equipment power fluctuation test ~



[Example of multichannel power fluctuation test]

With automobiles, electricity is supplied from a battery. Multiple automotive electronic components either switch ON or OFF depending on the order in which the electricity is turned ON = order in which the key is turned (+B \rightarrow ACC \rightarrow IG). There are an extremely large number of unstable elements in an automobile's power supply environment, including engine start-up and electrical circuit chattering; thus, potential power supply problems caused by these elements, such as instantaneous power interruptions and fluctuations, a power fluctuation test is performed for the channels of automotive electronic components.

■ Example of using synchronized operation



[Car navigation system]

CH1: +B LINE

Power is continuously being supplied from the battery to components such as clocks and memory.

en/download/index.html

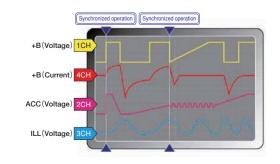
Download!

CH2: ACC LINE

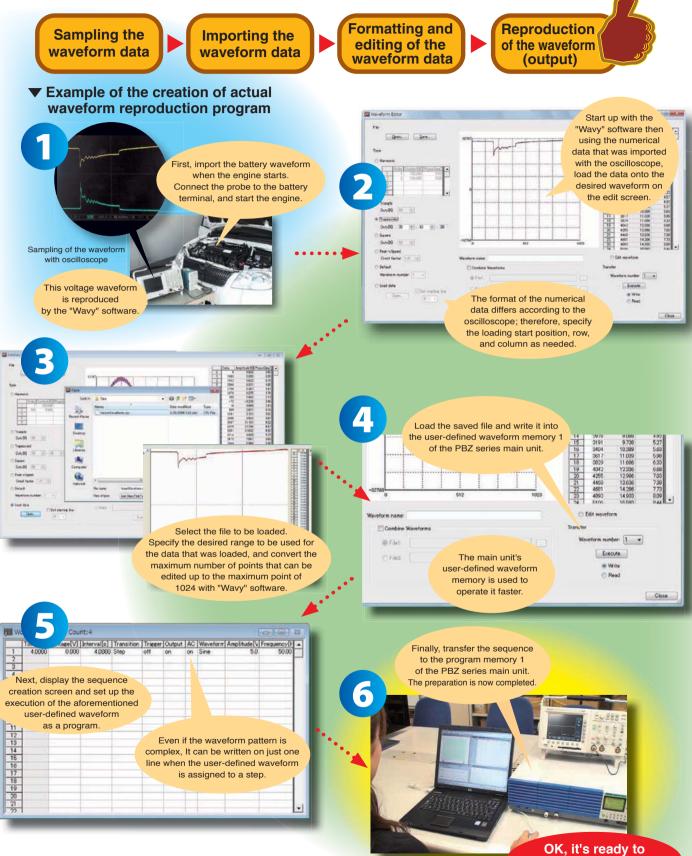
A car navigation system's power supply is turned on via the ignition switch's ACC contact. In this condition, it becomes possible to make navigation settings, listen to music, and perform other operations.

CH3: ILL LINE

Power supply line (ILL) that directly pulls up +B, IG, and ACC. It is a backup power supply line.



Example of application using the "Wavy" software ~ Automotive equipment power fluctuation test ~ Achievement of actual waveforms with the PBZ series!



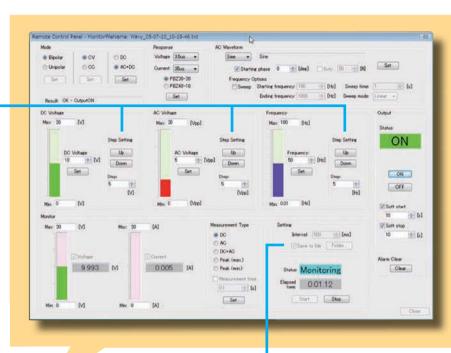
reproduce the waveform!

Example of application using the "Wavy" software ~ Step conversion capability and monitoring ~

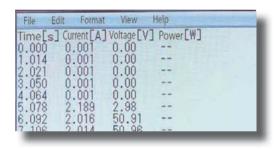
Simple, convenient "direct control" with a sense of remote control

When the "Wavy" software's direct control is used for delicate operations and complicated settings that cannot be performed by the panel operation of the power supply. The "Wavy" software can be used conveniently as a "remote control" for power supplies and electronic loads, and also as a simple data logger.

Capable of step change, that is like the steps on stairs. This is something that cannot be operated from the knobs of a power supply main unit.







The output can be monitored and the data can be saved as a text file in CSV or tab-separated value (TSV) form.

interface

LAN INTERFACE

The PBZ SR/BP series is equipped with the LAN interface (LXI compliant) as a standard interface in addition to the GPIB, RS232C, and USB interface. In regards to the command, it applies to the SCPI in addition to IEEE488.2. Using the instrument drivers (downloaded from our website) allows you to control with Excel VBA and LabVIEW, as well as sequence control with the sequence creation software Wavy (Wavy for PBZ). By using the LAN interface, power control and monitoring from a web browser is also possible.

LXI compliant !!

control and monitor the power from a browser!



specifications

[Conditions]
Condition in which the output COM terminal is connected to the chassis with the short piece (included) at the rear output terminal If not specified,condition in which remote sensing is performed at output terminal.
Warm-up time is 30 minutes (condition with current flowing). Load is pure resistance. TYP value is typical value for 23°C, but performance is not guaranteed.

Input / Output PBZ40-30 SR PBZ40-40 SR PBZ40-50 SR PBZ20-80 SR Nominal input voltage 200 Vac to 240 Vac Voltage range 180 Vac to 250 Vac 47 Hz to 63 Hz Frequency range Input rating Current 15 Aac or less 20 Aac or less 25 Aac or less 15 Aac or less 20 Aac or less 25 Aac or less Inrush current 120 Apeak or less 160 Apeak or less 200 Apeak or less 120 Apeak or less 160 Apeak or less 200 Apeak or less 2700 VA or less 3600 VA or less 4500 VA or less 2700 VA or less 3600 VA or less 4500 VA or less Power 0.95 TYP (when the input voltage is 200 V) Power factor Power 1200 W 1600 W 2000 W 1200 W 1600 W 2000 W Output rating Voltage ± 20 V ± 40 V Current + 80 A + 100 A + 30 A + 40 A + 50 A +60AOutput terminal Rear panel output terminals Output terminal Isolation Voltage 500 Vdc Only the output's COM terminal can be grounded. Constant Voltage (CV) Bipolar mode 0 V to \pm (105 % of rating) Settable Unipolar mode 0 V to + (105 % of rating) range *1 Fine feature ±5% of rating DC voltage Resolution 0.001 V (0.0001 V for the fine feature) Accuracy *2 ± (0.05 % of setting + 0.05 % of rating) Temperature coefficient ±100 ppm / °C of rating (TYP) Settable range *1 0 Vp-p to (210 % of rating) p-p 0 Vp-p to (210 % of rating) p-p Resolution 0 01 V 0.1 V Voltage AC voltage ± 0.5 % of rating Accuracy *3 Frequency Settable range 0.01 Hz to 100.00 kHz DC to 100 kHz (-3 dB) (TYP) Frequency response *4 Response *5 (TYP) $3.5~\mu s,~10~\mu s,~35~\mu s,~100~\mu s$ Overshoot *6 5 % or less (TYP) Constant 30 mV (TYP) voltage (p-p) *7 Ripple noise characteristics (rms) *8 3 mV 6 mV Load effect *9 ± (0.005 % of setting + 1 mV) Source effect *10 ± (0.005 % of setting + 1 mV) 0 A to ± (105 % of rating) Bipolar mode Settable Unipolar mode 0 A to ± (105 % of rating) range ± 5 % of rating Fine feature 0 005 A DC current Resolution *11 0 003 A 0 004 A 0 005 A 0 003 A 0 004 A Fine feature *11 0.0003 A 0.0004 A 0.0005 A 0.0003 A 0.0004 A 0.0005 A Accuracy *2 ± 0.3 % of rating Temperature coefficient ± (100 ppm / °C of rating) (TYP) Settable range *1 0 Ap-p to (210 % of rating) p-p Current Resolution *12 0.03 A 0.04 A 0.04 A 0.05 A AC current Accuracy *13 ± 0.5 % of rating 0.01 Hz to 100.00 kHz Frequency Settable range Frequency response *14 DC to 10 kHz (-3 dB) (TYP) DC to 5 kHz (-3 dB) (TYP) Response *15 (TYP) 35 μs, 100 μs, 350 μs, 1 ms 70 μs, 100 μs, 350 μs, 1 ms Constant Overshoot *16 5 % or less (TYP) current Ripple noise (rms) *17 5 mA characteristics Load effect *18 ± (0.01 % of setting + 1 mA) Source effect *19 ± (0.01 % of setting + 1 mA) Frequency resolution 0.01 Hz Frequency Accuracy ± 200 ppm Sweep Linear and logarithmic Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms Waveform Start phase 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz \leq f < 1 kHz), 10 % to 90 % (1 kHz \leq f < 10 kHz), and fixed to 50 % (10 kHz \leq f)

- *1 : The peak value of the sum of the DC voltage and AC voltage is limited by the DC voltage's settable range
- At an ambient temperature between 18 °C and 28 °C.

Square wave duty cycle

- 1 kHz sine wave, 3.5 μs response.
- A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB (when the referencefrequency is 1 kHz, the response is 3.5 us, and when a rated load is connected),
- The rise or fall time (at rated load; excluding when output is turned on and off). The frequency response is based on the specified response setting (frequency bandwidth = 0.35/the rise time). Rise time: The time it takes for the output voltage to rise from 10 % to 90 % of the rating when the output voltage is characteristic. Fall time: The time it takes for the output current to fall from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 A.
- *6 : Under no load or rated load.
- The measurement frequency bandwidth is 10 Hz to 20 MHz (at the output terminals).
- The measurement frequency bandwidth is 10 Hz to 1 MHz (at the output terminal
- (mea-sured at the sensing terminals when remote sensing is used).
- *10 : The change in the output voltage in response to a ±10 % change in the input voltage in reference to the nominal input voltage(measured at the sensing terminals when remote sensing is used)

	ıt		PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR	PBZ80-15 SR	PBZ80-20 SR	PBZ80-25 SR
	Nominal in	put voltage			200 Vac to	o 240 Vac		
	Voltage ra	nge			180 Vac to	o 250 Vac		
	Frequency	range			47 Hz to	o 63 Hz		
put rating	Current		15 Aac or less	20 Aac or less	25 Aac or less	15 Aac or less	20 Aac or less	25 Aac or less
	Inrush cur	rent	120 Apeak or less	160 Apeak or less	200 Apeak or less	120 Apeak or less	160 Apeak or less	200 Apeak or les
	Power		2700 VA or less	3600 VA or less	4500 VA or less	2700 VA or less	3600 VA or less	4500 VA or less
	Power fac	tor			0.95 TYP (when the in	nput voltage is 200 V)		
	Power		1206 W	1608 W	2010 W	1200 W	1600 W	2000 W
utput rating				± 60 V			± 80 V	I
3	Current		± 20.1 A	± 26.8 A	± 33.5 A	± 15 A	± 20 A	± 25 A
	Output terminal					tput terminals		
utput terminal	Isolation V			500 V	· · · · · · · · · · · · · · · · · · ·	OM terminal can be grou	ınded	
onstant Vol		onago		000 1	do Only the output o O	OW torrillia our be gree	inded.	
Jiistant voi	lage (CV)	Ringler mode			0.V+o + (105	9/ of roting)		
	Settable	Bipolar mode			0 V to ± (105			
	range *1	Unipolar mode			0 V to + (105			
C voltage		Fine feature			±5% 0			
	Resolution				0.002 V (0.0002 V	· · · · · · · · · · · · · · · · · · ·		
	Accuracy				± (0.05 % of setting			
	Temperatu	re coefficient			± 100 ppm / °C			
		Settable range *1			0 Vp-p to (210 t	% of rating) p-p		
C voltage	Voltage	Resolution			0.1	V		
o vollago		Accuracy *3			± 0.5%	of rating		
	Frequency	Settable range			0.01 Hz to	100.00 kHz		
	Frequency	response *4			DC to 100 kHz	(-3 dB) (TYP)		
	Response	*5 (TYP)	3.5 µs, 10 µs, 35 µs, 100 µs					
onstant	Overshoot	*6			5 % or le	ss (TYP)		
oltage	Ripple	(p-p) *7			40 mV	(TYP)		
aracteristics	noise	(rms) *8			6 r	nV		
	Load effect	t *9			± (0.005 % of s	setting + 1 mV)		
	Source eff	ect *10			± (0.005 % of s	setting + 1 mV)		
onstant cur	rent (CC)							
		Bipolar mode			0 A to ± (105	% of rating)		
	Settable	Unipolar mode			0 A to ± (105	% of rating)		
	range *1	Fine feature			±5%0	of rating		
		+4.4	0.003 A	0.004 A	0.005 A			I
C current	Resolution	1 "11	U.UU3 A			0.003 A	0.004 A	0.005 A
C current	Resolution					0.003 A 0.0003 A	0.004 A 0.0004 A	0.005 A 0.0005 A
C current		Fine feature *11	0.0003 A	0.0004 A	0.0005 A	0.0003 A	0.004 A 0.0004 A	0.005 A 0.0005 A
C current	Accuracy	Fine feature *11			0.0005 A ± 0.3 %	0.0003 A of rating		
C current	Accuracy	Fine feature *11 *2 ire coefficient			0.0005 A ± 0.3 % ± (100 ppm / °C	0.0003 A of rating of rating) (TYP)		
C current	Accuracy Temperatu	Fine feature *11 *2 tre coefficient Settable range *1	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210	0.0003 A of rating of rating) (TYP) % of rating) p-p	0.0004 A	0.0005 A
	Accuracy	Fine feature *11 *2 tre coefficient Settable range *1 Resolution *12			0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A		
	Accuracy Temperatu Current	Fine feature *11 22 are coefficient Settable range *1 Resolution *12 Accuracy *13	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 ° 0.05 A ± 0.5 %	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating	0.0004 A	0.0005 A
	Accuracy Temperatu Current Frequency	Fine feature *11 *2 tre coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A ± 0.5 % 0.01 Hz to	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz	0.0004 A	0.0005 A
	Accuracy Temperatu Current Frequency	Fine feature *11 *2 re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP)	0.0004 A	0.0005 A
C current	Accuracy Temperatu Current Frequency Frequency Response	Fine feature *11 *2 tre coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP)	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 ° 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms	0.0004 A	0.0005 A
C current	Accuracy Temperatu Current Frequency Frequency Response Overshoot	Fine feature *11 *2 tre coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 ° 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 μs, 100 μs. 5 % or le	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 μs. 1 ms ss (TYP)	0.0004 A	0.0005 A
C current	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi:	Fine feature *11 *2 *re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range * response *14 *15 (TYP) *16 **16 **16 **17	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 ° 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 μs, 100 μs. 5 % or le	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 μs. 1 ms ss (TYP)	0.0004 A	0.0005 A
C current	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect	Fine feature *11 *2 tre coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs, 5 % or le ± (0.01 % of s	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA)	0.0004 A	0.0005 A
C current constant urrent aracteristics	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effec Source eff	Fine feature *11 *2 **re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 *t *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 ° 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 μs, 100 μs. 5 % or le	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA)	0.0004 A	0.0005 A
C current onstant urrent haracteristics	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effec Source eff	Fine feature *11 *2 **re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 *t *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs, 5 % or le ± (0.01 % of s	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA)	0.0004 A	0.0005 A
C current onstant urrent aracteristics	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect Source eff	Fine feature *11 *2 *re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 tt *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs, 5 % or le ± (0.01 % of s	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs, 1 ms ss (TYP) nA etting + 1 mA) etting + 1 mA)	0.0004 A	0.0005 A
C current onstant urrent naracteristics C common requency ref	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect Source eff characteriseseolution	Fine feature *11 *2 *re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 tt *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs. 5 % or le ± (0.01 % of s ± (0.01 % of s	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs, 1 ms ss (TYP) mA etting + 1 mA) etting + 1 mA)	0.0004 A	0.0005 A
C current constant urrent naracteristics C common requency re	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect Source eff characteriseseolution	Fine feature *11 *2 *re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 tt *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C) 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs. 5 % or le ± (0.01 % of s ± (0.01 % of s	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA) etting + 1 mA)	0.0004 A	0.0005 A
C current C current constant urrent naracteristics C common requency re requency A weep	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect Source eff characteriseseolution	Fine feature *11 *2 *re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range *response *14 *15 (TYP) *16 se (rms) *17 tt *18 ect *19	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs. 5 % or le ± (0.01 % of s ± (0.01 % of s 0.01 ± 200	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA) etting + 1 mA) Hz ppm logarithmic	0.0004 A	0.0005 A
C current onstant urrent naracteristics C common requency re	Accuracy Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load effect Source eff characteris esolution ccuracy	Fine feature *11 P2 P2 P3 P4 P5 P5 P6 P6 P7 P6 P7	0.0003 A	0.0004 A	0.0005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 °C 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs. 5 % or le ± (0.01 % of s ± (0.01 % of s 0.01 ± 200 Linear and	0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz (-3 dB) (TYP) 350 µs. 1 ms ss (TYP) mA etting + 1 mA) etting + 1 mA) letting + 1 mA) and logarithmic and 16 user-defined arbitance.	0.0004 A	0.0005 A

^{*11:} You can set the DC current in 0.001 A (0.0001 A for the fine feature) steps, but it may not change at this resolution depending

on the relationship with the internal D / A resolution.

112 : You can set the DC current in 0.001 A (0.000 A) from the internal D / A resolution on the relationship with the internal D / A resolution.

112 : You can set the AC current in 0.01 A steps, but it may not change at this resolution depending on the relationship with the internal D/A resolution.

113 : 100 Hz sine wave, 35 μs/70 μs response, and shorted output.

114 : A frequency where the amplitude ratio of the output current to the external signal input voltage is -3 dB (when the reference

frequency is 100 Hz, the response is 35 µs/75 µs, and a rated load is connected). The frequency response changes according to the load impedance. When the load impedance increases, the frequency response decreases.

^{*15:} The rise or fall time (at rated load; excluding when output is turned on and off). The rise and fall times change according to the load impedance.

Rise time. The time it takes for the output current to rise from 10 % to 90 % of the rating when the output current is changed from 0 A to the rated current.

Fall time: The time it takes for the output current to fall from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 A.

^{*16:} Under short circuit or rated load.

^{*17 :} The measurement frequency bandwidth is 10 Hz to 1 MHz (when the output voltage is in the range of 10 % to 100 % of the rated output voltage).
*18 : The change in the output current in response to a change in the output voltage from 10 % to 100 % of the voltage rating.

^{*19 :} The change in the output current in response to a ±10 % change in the input voltage in reference to the nominal input voltage (when the output voltage is in the range of 10 % to 100 % of the voltage rating).

specifications

[Conditions]

Condition in which the output COM terminal is connected to the chassis with the short piece (included) at the rear output terminal. If not specified, condition in which remote sensing is performed at output terminal. Warm-up time is 30 minutes (condition with current flowing). Load is pure resistance. TYP value is typical value for 23°C, but performance is not guaranteed.

Measuremer	nt function		PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR
Voltage	Measurem	ent range		,	120 %	of rating		
measurement	Resolution				0.00)1 V		
DC)	Accuracy *	1			± (0.05 % of reading	+ 0.05 % of rating)		
	Measuremen	AC			120 % of	rating / CF		
	range	DC + AC			120 %	of rating		
Voltage	Resolution				0.00)1 V		
measurement $(AC,DC+AC)$		5 Hz< f ≦ 10kHz			± (0.5 % of reading	+ 0.1 % of rating)		
(10,50 1 110)	Accuracy *1, *2					+ 0.2 % of rating)		
						+ 0.2 % of rating)		
	Measurement range					of rating		
Voltage measurement					0.0			
(PEAK)	Accuracy *				± 0.5 %			
	Measurem		0.000.4	0.004.4		of rating	0.004.4	0.005.4
Current	Resolution		0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A
measurement (DC)	Accuracy *	1	± (0.3 % of reading+ 0.7 % of rating)	± (0.3 % of reading+ 1.0 % of rating)	± (0.3 % of reading+ 1.3 % of rating)	± (0.3 % of reading+ 0.7 % of rating)	± (0.3 % of reading+ 1.0 % of rating)	± (0.3 % of reading+ 1.3 % of ratin
	Temperatu	re coefficient			± (150 ppm / °C	of rating) (TYP)		0.005 A ± (0.3 % of reading+ 1.3 % of ratin 0.005 A
	Measuremen	AC			120 % of	rating / CF		
Current	range	DC + AC			120 %	of rating		
Current measurement	Resolution	•	0.003A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A
(AC,DC + AC)	Accuracy	5Hz< f ≦ 10kHz			± (3 % of reading	+ 0.1 % of rating)		
	*1,*2	10kHz< f ≦ 50kHz			± (10 % of reading	g + 1 % of rating)		
_	Measurem	ent range			•	of rating		
Current measurement			0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A
(PEAK)	Accuracy *				± 0.5 %			
Measuremer						o 3600 s		
Protection F								
		Overevent pretent	ion, Overheat protection,	Dawar limit (sink nawar)				
	protection,	Overcurrent protecti	ion, Overnear protection,	Tower littlit (sink power)				
Interface	DID LIOD I	A N I						
RS232C, GF	PIB, USB, L	AN						
General								
Operating te						0 40 °C		
Operating hu	umidity rang	e			20 %RH to 85 %RF	I (no condensation)		
Storage tem	perature rar	nge			-25 °C	to 70°C		
Storage hum	nidity range				90 %rh or less (r	no condensation)		
		primary circuit tput terminals			0 Vdc, 30 MΩ or greater	/-t 70 0/ -t h: ::::: !-	>	
Insulation resistance	Across the and chassi	primary circuit		30	o vac, oo wise or greater	(at 70 75111 Harmony Of Te	33)	
	Across the	e output terminals is *4	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater
Withstand		primary circuit tput terminals			No obno	IFOO Voo for designation		
voltage	Across the and chassi	primary circuit			ino adhornalities at 1	500 Vac for 1 minute		
Leakage cur	rent (250 V	/ 60 Hz)			10 mA	or less		
Earth continu	uity				100 Aac, 0	.1 Ω or less		
Cooling met	hod			Ford	ed air cooling using varia	able-speed, heat-sensitiv	e fan	
Battery back					ed when the power is off.			
Weight			Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg (352.74 lbs)	Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg (352.74 lbs)
			400 0/47 00 \ /E4E/04 40 \\\	400 0(47 00) (545/04 40)))44	400 0/47 00 \ /E4E/04 40 \\\	400 0(47 0011) /545/04 4011)	400 0/47 00 \ /E4E/04 40 \\\\	400 C(47 00ll) (E4E(04 40ll))

 $432.6(17.03") (545(21.46")) Wx \\ 432.6(17.03") (545(21.46")) Wx$

 $579.4(22.81") (685(26.97")) Hx \\ 712.1(28.04") (815(32.09")) Hx \\ 844.8(33.26") (950(37.40")) Hx \\ 579.4(22.81") (685(26.97")) Hx \\ 712.1(28.04") (815(32.09")) Hx \\ 844.8(33.26") (950(37.40")) Hx \\ 712.1(28.04") (815(32.09")) Hx \\ 712.1(28.04") (815(32.09")) Hx \\ 844.8(33.26") (950(37.40")) Hx \\ 845.8(33.20") (950(37.40")) Hx$

 $700(27.56") (735(28.94")) Dmm \\ 700(27.56") (735(28.94")) Dm$ PBZ-SR series manuals : Setup Guide (1 pc.), Quick Reference (Japanese: 1 pc / English: 1 pc.), Safety Information (1 pc.) J1 connector kit : Socket (1 pc.), Protection covers (2 pairs), Pins (30 pc.)

Heavy object warning label (1 pc.), CD-ROM (1 pc.)

Dimensions

(maximum)

Accessories

^{*1 :} At an ambient temperature between 18 °C and 28 °C.
*2 : When the input signal is in the 100 kHz bandwidth and has a crest factor of 3 or less (the measurement time is at least 10 times the input signal period).
*3 : Calibrated with a 1 kHz sine wave.

^{*4 :} At 70 %rh humidity or less

Measuremer	rement function		PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR	PBZ80-15 SR	PBZ80-20 SR	PBZ80-25 SR	
Voltage	Measurem	ent range			120 % (of rating		•	
measurement	Resolution				0.00)1 V			
(DC)	Accuracy *	1			± (0.05 % of reading	+ 0.05 % of rating)			
	Measurement AC				120 % of I	rating / CF			
	range DC + AC				120 % (of rating			
Voltage measurement	Resolution				0.00)1 V			
(AC,DC + AC)		5 Hz< f ≦ 10kHz			± (0.5 % of reading	+ 0.1 % of rating)			
	Accuracy *1. *2	10 kHz< f ≦ 50kHz			± (1 % of reading	+ 0.2 % of rating)			
	1, 2	50 kHz< f ≦ 100kHz			± (2 % of reading	+ 0.2 % of rating)			
Voltage	Measurem	ent range			120 % (of rating			
measurement	Resolution				0.0)1V			
(PEAK)	Accuracy *	1, *3		± 0.5 % of rating					
	Measurem	ent range			120 % (of rating			
Current	Resolution		0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A	
measurement (DC)	Accuracy *	1	± (0.3 % of reading+ 0.7 % of rating)	± (0.3 % of reading+ 1.0 % of rating)	± (0.3 % of reading+ 1.3 % of rating)	± (0.3 % of reading+ 0.7 % of rating)	± (0.3 % of reading+ 1.0 % of rating)	± (0.3 % of reading+ 1.3 % of rating)	
	Temperatu	re coefficient			± (150 ppm / °C	of rating) (TYP)			
	Measurement	AC			120 % of i	rating / CF			
Current	range	DC + AC			120 % (of rating			
measurement	Resolution		0.003A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A	
(AC,DC + AC)	Accuracy	5Hz< f ≦ 10kHz			± (3 % of reading	+ 0.1 % of rating)			
	*1,*2	10kHz< f ≦ 50kHz			± (10 % of reading	g + 1 % of rating)			
Current	Measurem	ent range			120 % (of rating			
measurement	Resolution		0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A	
(PEAK)	Accuracy *	1,*3			± 0.5 %	of rating			
Measuremer	nt time (Aper	ture)			100 μs t	o 3600 s			
Protection Fe	eatures								

Overvoltage protection, Overcurrent protection, Overheat protection, Power limit (sink power)

Interface

RS232C, GPIB, USB, LAN

General								
Operating to	emperature range			0 °C to	40 °C			
Operating h	umidity range	20 %RH to 85 %RH (no condensation) -25 °C to 70°C						
Storage tem	nperature range	-25 °C to 70°C						
Storage hun	midity range	90 %rh or less (no condensation)						
	Across the primary circuit and the output terminals		50	0 Vdc 30 MQ or greater	(at 70 %rh humidity or le	(22		
Insulation resistance	Across the primary circuit and chassis		30	o vuc, oo waa or greater	(at 70 /off fluthland) of le	33)		
	Across the output terminals and chassis *4	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 M Ω or greater	500 Vdc, 0.20 MΩ or greater	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater	
Withstand	Across the primary circuit and the output terminals			No obnormalities at 1	500 Vac for 1 minute			
voltage	Across the primary circuit and chassis			No abhormanties at 1	300 vac loi i minute			
Leakage cu	rrent (250 V / 60 Hz)			10 mA	or less			
Earth contin	nuity			100 Aac, 0	.1 Ω or less			
Cooling met	thod		Ford	ed air cooling using varia	able-speed, heat-sensitive	e fan		
Battery back	kup		Settings are retained	ed when the power is off.	At least three years of ba	attery life (at 25 °C).		
Weight		Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg (352.74 lbs)	Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg (352.74 lbs)	
Dimensions (maximum)		432.6(17.03") (545(21.46"))W× 579.4(22.81") (685(26.97"))H× 700(27.56") (735(28.94"))Dmm	432.6(17.03") (545(21.46"))W× 712.1(28.04") (815(32.09"))H× 700(27.56") (735(28.94"))Dmm	432.6(17.03") (545(21.46"))Wx 844.8(33.26") (950(37.40"))Hx 700(27.56") (735(28.94"))Dmm	432.6(17.03") (545(21.46"))W× 579.4(22.81") (685(26.97"))Hx 700(27.56") (735(28.94"))Dmm	432.6(17.03") (545(21.46"))W× 712.1(28.04") (815(32.09"))H× 700(27.56") (735(28.94"))Dmm	432.6(17.03") (545(21.46"))Wx 844.8(33.26") (950(37.40"))Hx 700(27.56") (735(28.94"))Dmm	
Accessories	3	PBZ-SR seri	J1 connecto	r kit : Socket (1 pc.), Pro	ce (Japanese: 1 pc / Eng tection covers (2 pairs), el (1 pc.), CD-ROM (1 pc	Pins (30 pc.)	nation (1 pc.)	

specifications

Condition in which the output COM terminal is connected to the chassis with the short piece (included) at the rear output terminal. If not specified, condition in which remote sensing is performed at output terminal. Warm-up time is 30 minutes (condition with current flowing). Load is pure resistance. TYP value is typical value for 23°C, but performance is not guaranteed.

				but performance is not gu				
nput / Outpu	ıt		PBZ20-120 BP	PBZ20-140 BP	PBZ20-160 BP	PBZ20-180 BP	PBZ20-200 BP	
	Nominal input voltage			200 Vac t	o 240 Vac		200 Vac	
	Voltage rai	nge		180 Vac 1	o 250 Vac		180 Vac to 220 Va	
	Frequency	range			47 Hz to 63 Hz			
nput rating	Current Inrush current Power		30 Aac or less	35 Aac or less	40 Aac or less	45 Aac or less	50 Aac or less	
			240 Apeak or less	280 Apeak or less	320 Apeak or less	360 Apeak or less	400 Apeak or les	
	Power		5400 VA or less	6300 VA or less	7200 VA or less	8100 VA or less	9000 VA or less	
	Power fact	or		0.95 T	YP (when the input voltage is	200 V)		
	Power		2400 W	2800W	3200 W	3600 W	4000 W	
Output rating	-				± 20 V			
3	Current		± 120A	±140A	±160A	± 180 A	± 200A	
	Output terr	ninal	-	-	Rear panel output terminals			
Output terminal	Isolation V			300 Vdc Only	the output's COM terminal ca	an he arounded		
Constant Vol					,			
onotant voi	lago (OV)	Bipolar mode			0 V to ± (105 % of rating)			
	Settable	Unipolar mode			0 V to + (105 % of rating)			
	range *1							
C voltage	Deselvition	Fine feature		0.00	±5% of rating			
	Resolution				01 V (0.0001 V for the fine feat			
	Accuracy				.05 % of setting + 0.05 % of ra			
	Temperatu	re coefficient			± 100 ppm / °C of rating (TYP			
		Settable range *1			0 Vp-p to (210 % of rating) p-p)		
C voltage	Voltage	Resolution			0.1 V			
· ·		Accuracy *3			± 0.5% of rating			
	Frequency	Settable range			0.01 Hz to 100.00 kHz			
	Frequency	response *4			DC to 80 kHz (-3 dB) (TYP)			
	Response	*5 (TYP)	3.5 µs, 10 µs, 35 µs, 100 µs					
Constant	Overshoot	*6			5 % or less (TYP)			
oltage	Ripple	(p-p)			50 mV (TYP)			
haracteristics	noise	(rms)			6 mV			
	Load effec	*7			± (0.005 % of setting + 1 mV)			
	Source effe	ect *8			± (0.005 % of setting + 1 mV)			
Constant cur	rent (CC)							
	Settable	Bipolar mode			0 A to \pm (105 % of rating)			
	range *9	Unipolar mode			0 A to \pm (105 % of rating)			
	lange 5	Fine feature			± 5 % of rating			
OC current	Resolution	*10	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A	
		Fine feature	0.0006 A	0.0007 A	0.0008 A	0.0009 A	0.0010 A	
	Accuracy *	11		I	± 0.5 % of rating			
	Temperatu	re coefficient		=	± (100 ppm / °C of rating) (TYF	?)		
		Settable range *9			0 Ap-p to (210 % of rating) p-p			
	Current	Resolution *10	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A	
C current		Accuracy *12		1	± 0.5 % of rating	1	1	
	Frequency	Settable range			0.01 Hz to 100.00 kHz			
		response *13			DC to 8 kHz (-3 dB) (TYP)			
	Response				35 μs, 100 μs, 350 μs, 1 ms			
Constant	Overshoot				5 % or less (TYP)			
urrent					. , ,			
	Ripple nois				15 mA			
haracteristics	Load effect *16				± (0.01 % of setting + 1 mA)			
haracteristics					± (0.01 % of setting + 1 mA)			
	Source effe							
AC common	Source effective characteris							
AC common	Source effective characteris				0.01 Hz			
C common	Source efforcharacterisesolution				0.01 Hz ± 200 ppm			
AC common Frequency re Frequency A Sweep	Source efforcharacterisesolution							
AC common Frequency re Frequency A	Source efforcharacterisesolution			Sine wave, square wave,	± 200 ppm	fined arbitrary waveforms		

- *1 : The peak value of the sum of the DC voltage and AC voltage is limited by the DC voltage's settable range.
 *2 : At an ambient temperature between 18 °C and 28 °C.
- *3 : At 1kHz sine wave, 3.5µs response and no load for 2 units in parallel.At 100Hz sine wave, 10µs response and no load
- *4 : A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB
- A requency where the amplitude ratio or the output voltage to the external signal input voltage is 3 or (when the referencefreque) is 1 kHz, the response is 3.5 µs, and when a rated load is connected).
 Filse or fall time (at rated load; excluding when output is turned on and off). The frequency response is based on the specified response setting (frequency bandwidth = 0.35/rise time). Rise time: The time it takes for the output voltage to rise from 10% to 90% of the rating when the output voltage is changed from 01 to the rated voltage. Fall time: The time it takes for the output voltage. to fall from 90% to 10% of the rating when the output voltage is changed from the rated voltage to 0V.
- 16 : Under no load or rated load.
 17 : The change in the output voltage in response to a change in the output current from 0 % to 100 % of the current rating (mea-sured at the sensing terminals when remote sensing is used).

 8: The change in the output voltage in response to a ±10 % change in the input voltage in reference to the nominal input
- voltage(measured at the sensing terminals when remote sensing is used).
- *9 : Due to resolution of the internal DA, it may not be switched at 0.01A setting.
- *10 : You can set the AC current in 0.01 A steps, but it may not change at this resolution depending on the relationship with the internal

_			PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP	PBZ40-100 BP				
V	lominal in	out voltage		200 Vac t	o 240 Vac		200 Vac				
	oltage rar	ige		180 Vac t	o 250 Vac		180 Vac to 220 Vac				
Fi	requency	range			47 Hz to 63 Hz						
out rating C	Current		30 Aac or less	35 Aac or less	40 Aac or less	45 Aac or less	50 Aac or less				
In	nrush curr	ent	240 Apeak or less	280 Apeak or less	320 Apeak or less	360 Apeak or less	400 Apeak or less				
P	Power		5400 VA or less	6300 VA or less	7200 VA or less	8100 VA or less	9000 VA or less				
P	ower fact	or		0.95 T	YP (when the input voltage is	200 V)	4000 W				
P	Power		2400 W	2800W	3200 W	3600 W	4000 W				
tput rating Vo	/oltage				± 40 V		I				
	Current		± 60A	±70A	±80A	± 90 A	± 100A				
О	Output tern	ninal			Rear panel output terminals		<u> </u>				
put terminal Is	solation Vo	oltage		300 Vdc Only	the output's COM terminal ca	ın be grounded.					
nstant Voltag											
		Bipolar mode			0 V to ± (105 % of rating)						
S	Settable	Unipolar mode			0 V to + (105 % of rating)						
ra	ange *1	Fine feature			±5% of rating						
voltage	Resolution	I mo roataro		0.00	01 V (0.0001 V for the fine feat	ure)					
-	Accuracy '	2			05 % of setting + 0.05 % of ra	•					
-		re coefficient			± 100 ppm / °C of rating (TYP)						
I F	omperatu				2 Vp-p to (210 % of rating) p-p						
14.	/oltage	Settable range *1 Resolution			0.1 V	•					
voltage	ronage										
-		Accuracy *3			± 0.5% of rating						
		Settable range			0.01 Hz to 100.00 kHz						
_		response *4			DC to 80 kHz (-3 dB) (TYP)						
_	Response				3.5 μs, 10 μs, 35 μs, 100 μs						
-	Overshoot				5 % or less (TYP)						
	Ripple	(p-p)			50 mV (TYP)						
aracteristics		(rms)			12 mV						
-	oad effect				± (0.005 % of setting + 1 mV)						
	Source effe	ect *8			± (0.005 % of setting + 1 mV)						
nstant currer	ent (CC)	Bipolar mode			0 A to ± (105 % of rating)						
S	Settable	Unipolar mode			0 A to ± (105 % of rating)						
ra	ange *9	Fine feature			± 5 % of rating						
Causemant D) a a a lustica		0.000 A	0.007.4	-	0.000 A	0.010.4				
C current R	Resolution		0.006 A	0.007 A	0.008 A	0.009 A	0.010 A				
-	001170 *	Fine feature	0.0006 A	0.0007 A	0.0008 A	0.0009 A	0.0010 A				
	ccuracy *				± 0.3 % of rating	Λ					
Ie	emperatu	re coefficient			(100 ppm / °C of rating) (TYF	,					
		Settable range *9	0.00.4		0 Ap-p to (210 % of rating) p-p		0.40.4				
current	Current	Resolution *10	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A				
F		Accuracy *12			± 0.5 % of rating						
(F)		Settable range			0.01 Hz to 100.00 kHz						
	Frequency response *13				DC to 4 kHz (-3 dB) (TYP)						
Fi	Response *14 (TYP)				70 μs, 100 μs, 350 μs, 1 ms						
Fr R			5 % or less (TYP)								
Finstant O	Overshoot	*15				15 mA					
nstant Orrent Ruracteristics	Overshoot Ripple nois	*15 e (rms)			15 mA						
onstant O R Lc	Overshoot Ripple nois oad effect	*15 e (rms) *16			15 mA ± (0.01 % of setting + 1 mA)						
rrent Raracteristics Science Science Raracteristics	Overshoot Ripple nois oad effect Source effe	*15 e (rms) *16 ect *17			15 mA						
rrent Raracteristics R Lc Sc common ch	Overshoot Ripple nois load effect Source effe haracterist	*15 e (rms) *16 ect *17			15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)						
nstant O rrent R Lc Sc common ch	Overshoot Ripple nois load effect Source effe haracterist	*15 e (rms) *16 ect *17			15 mA ± (0.01 % of setting + 1 mA)						
nstant O R Lc Si common chequency resc	Overshoot Ripple nois Load effect Source effet naracterist olution	*15 e (rms) *16 ect *17			15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)						
onstant rrent Arracteristics Common chequency resceptions	Overshoot Ripple nois Load effect Source effet naracterist olution	*15 e (rms) *16 ect *17			15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)						
onstant rrent Arracteristics Common ch equency resc equency Accureep	Overshoot Ripple nois Load effect Source effet naracterist olution	*15 e (rms) *16 ect *17		Sine wave, square wave,	15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm	fined arbitrary waveforms					
onstant Prince P	Overshoot Ripple nois Load effect Source effect naracterist colution curacy	*15 e (rms) *16 cct *17		Sine wave, square wave,	15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm Linear and logarithmic	fined arbitrary waveforms					
nstant rent R racteristics R common ch equency resc equency Acci	Overshoot Ripple noisi Ripple noisi Road effect Source effe Interactorist Colution Ruracy Type Start phase	*15 e (rms) *16 cct *17	0.1 % to 99.9 % (f <	· · · · · · · · · · · · · · · · · · ·	15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm Linear and logarithmic triangle wave, and 16 user-de	•	to 50 % (10 kHz ≤ f)				

^{*11 :} At an ambient temperature between 18 °C and 28 °C.

^{*11 :} At an ambient temperature between 18 °C and 28 °C.
*12 : At 100Hz sine wave, 35µs response and shorted output.
*13 : A frequency where the amplitude ratio of the output current to the external signal input voltage is -3 dB (when the reference frequency is 100 Hz, the response is 35 µs/75 µs, and a rated load is connected). The frequency response changes according to the load impedance. When the load impedance increases, the frequency response decreases.
*14 : Rise or fall time (at rated load; excluding when output is turned on and oft). Rise time: The time it takes for the output current to rise from 10% to 90% of the rating when the output current is changed from 0A to the rated current. Fall time: The time it takes for the output current to fall from 90% to 10% of the rating when the output current is changed from the rated current to 0A. The rise and fall times change according to the load impedance.

^{*15 :} Under short circuit or rated load.
*16 : The change in the output current in response to a change in the output voltage from 10 % to 100 % of the voltage rating.
*17 : The change in the output current in response to a ±10 % change in the input voltage in reference to the nominal input voltage (when the output voltage is in the range of 10 % to 100 % of the voltage rating).

specifications

[Conditions]
Conditions in which the output COM terminal is connected to the chassis with the short piece (included) at the rear output terminal. If not specified, condition in which remote sensing is performed at output terminal.
Warm-up time is 30 minutes (condition with current flowing). Load is pure resistance. TYP value is typical value for 23°C, but performance is not guaranteed.

				PBZ20-140 BP	DD=00 400 DD	PBZ20-180 BP	PBZ20-200 BP
Measuremei	ment function		PBZ20-120 BP	1 D220-140 D1	PBZ20-160 BP	FBZ20-100 BP	l
oltage	Measurement range t Resolution				120 % of rating		
easurement	Accuracy *1 Measurement AC				0.001 V		
DC)				± (0.0	05% of reading $+~0.05%$ of r	rating)	
	Measurement	AC			120 % of rating / CF		
	range	DC + AC			120 % of rating		
oltage	Resolution				0.001 V		
easurement $C,DC + AC$		5 Hz< f ≦ 10kHz		± (0	.5 % of reading + 0.1 % of ra	iting)	
,	Accuracy *1, *2	10 kHz< f ≦ 50kHz		± (1 % of reading + 0.2 % of rat	ing)	
	1, 2	50 kHz< f ≤ 100kHz		± (:	2 % of reading + 0.2 % of rat	ing)	
oltage	Measurem	ent range			120 % of rating		
	Resolution				0.01V		
PEAK)	Accuracy *	1, *3			± 0.5 % of rating		
Measurement range		ent range			120 % of rating		
	Resolution		0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
current leasurement DC)	Accuracy *	1	± (0.3 % of reading+ 1.6 % of rating)	± (0.3 % of reading+ 1.9 % of rating)	± (0.3 % of reading+ 2.2 % of rating)	± (0.3 % of reading+ 2.5 % of rating)	± (0.3 % of reading+ 2.8 % of rating)
	Temperatu	re coefficient			(150 ppm / °C of rating) (TYF	5)	
	 			2	120 % of rating / CF	,	
	Measurement range	DC + AC			120 % of rating / CF		
urrent easurement	ļ .		0.006A	0.007 A	0.008 A	0.009 A	0.010 A
(C,DC + AC)			U.000A	ļ	0.008 A 3 % of reading + 0.1 % of rat		0.010 A
	Accuracy *1,*2	5Hz <f 10khz<="" td="" ≤=""><td></td><td></td><td></td><td></td><td></td></f>					
		10kHz< f ≤ 50kHz		±(10 % of reading + 1 % of ration	ilg)	
urrent	Measurem		0.00 4	0.07.4	120 % of rating	0.00.4	0.40.4
easurement	Resolution		0.06 A	0.07 A	0.08 A	0.09 A	0.10 A
PEAK)	Accuracy *1,*3				± 0.5 % of rating		
	Accuracy * nt time (Aper				100 μs to 3600 s		
Protection For Expension Protection For Expension Protection For Expension Front Protection	nt time (Aper	rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	•		
Measurement Protection For Divervoltage Interface	nt time (Aper eatures protection, (rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	•		
Measurement Protection For Exercising Protection For Exercising Protec	nt time (Aper eatures protection, (rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	•		
Measurement Protection For Protectio	nt time (Aper eatures protection, (rture) Overcurrent protect AN ange	ion, Overheat protection, Pow		100 μs to 3600 s	ation)	
Measurement Protection For Divervoltage Interface RS232C, GRadeneral Diversiting teach properating the Diversiting his protection of the P	reatures protection, (rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow		100 μs to 3600 s 0 °C to 40 °C	ation)	
Measurement Protection For Divervoltage Interface RS232C, GRadeneral Diversiting teach properating the Diversiting his protection of the P	reatures protection, (protect	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow	20 9	100 μs to 3600 s 100 αs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condense	. · ·	
Measurement Protection For Divervoltage Interface RS232C, GRadenal Diversity of Diversity of the Diversity o	reatures protection, (protection,	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow	20 %	0 °C to 40 °C 6RH to 85 %RH (no condensation of the condensation) 0 %rh or less (no condensation)	in)	
Measurement Protection For Divervoltage Interface RS232C, GRadenal Diversity of Diversity of the Diversity o	nt time (Apericatures protection, (Apericature ramanidity range Across the and the out	Overcurrent protect AN ange e gge primary circuit tput terminals primary circuit	ion, Overheat protection, Pow	20 %	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condense -25 °C to 70°C	in)	
Protection For Divervoltage Interface RS232C, GR General Diperating to Diperating historage term Storage humansulation	nt time (Aper PIB, USB, LA PER PIB, USB,	Overcurrent protect AN ange e gge primary circuit tput terminals primary circuit s		20 %	0 °C to 40 °C 6RH to 85 %RH (no condensation of the condensation) 0 %rh or less (no condensation)	in)	500 Vdc, 0.1 MΩ or greater
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retection F Overvoltage Interface IS232C, GF Interface IS332C, GF Interf	nt time (Aper Aper Aper Aper Aper Aper Aper Aper	Overcurrent protect AN ange e gge primary circuit tput terminals primary circuit s e output terminals primary circuit tput terminals the output terminals primary circuit tput terminals primary circuit tput terminals	500 Vdc,	20 9 9 500 Vdc, 30 500 Vdc, 0.142 MΩ or greater No ab Forced air coc Settings are retained when the Approx. 280 kg	0 °C to 40 °C 6RH to 85 %RH (no condensation "25 °C to 70 °C 0 %rh or less (no condensation MΩ or greater (at 70 %rh hur 500 Vdc, 0.125 MΩ or greater normalities at 1500 Vac for 1 15 mA or less 100 Aac, 0.1 Ω or less ling using variable-speed, hese	nidity or less) 500 Vdc, 0.111 MΩ or greater minute	0.1 MΩ or greater
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^{*1 :} At an ambient temperature between 18 °C and 28 °C.

*2 : When the input signal is in the 100 kHz bandwidth and has a crest factor of 3 or less (the measurement time is at least 10 times the input signal period).

*3 : Calibrated with a 1 kHz sine wave.

*4 : At 70 %rh humidity or less

*5 : At 200V/60Hz for PBZ20-200BP

Measureme	nt function		PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP	PBZ40-100 BP	
/oltage	Measurement range t Resolution				120 % of rating			
neasurement					0.001 V			
DC)				± (0.	05 % of reading + 0.05 % of r	rating)		
	Manauramani	AC		,	120 % of rating / CF			
	range	DC + AC			120 % of rating			
oltage	Resolution	B0 + 710						
easurement		5 U 4 < 40U -	0.001 V ± (0.5 % of reading + 0.1 % of rating)					
AC,DC + AC)	Accuracy	5 Hz< f ≦ 10kHz						
	*1, *2	10 kHz< f ≦ 50kHz		± (1 % of reading + 0.2 % of rati	ing)		
		50 kHz< f ≦ 100kHz		± (2 % of reading + 0.2 % of rati	ing)		
oltage	Measurement range Resolution Accuracy *1, *3				120 % of rating			
easurement					0.01V			
PEAK)					± 0.5 % of rating			
	Measurement range				120 % of rating			
	Resolution		0.006 A	0.007 A	0.008 A	0.009 A	0.010 A	
urrent easurement DC)	Accuracy *	1	± (0.3 % of reading+ 1.6 % of rating)	± (0.3 % of reading+ 1.9 % of rating)	± (0.3 % of reading+ 2.2 % of rating)	± (0.3 % of reading+ 2.5 % of rating)	± (0.3 % of reading+ 2.8 % of rating)	
	Tomporatu	ro coefficient	3,	1	J		3,	
		re coefficient		=	± (150 ppm / °C of rating) (TYF	1		
	Measurement range				120 % of rating / CF			
urrent	-	DC + AC		T	120 % of rating	T.		
easurement $C,DC + AC$			0.006A	0.007 A	0.008 A	0.009 A	0.010 A	
0,D0 A0)	Accuracy	5Hz< f ≦ 10kHz		± (3% of reading $+$ 0.1 $%$ of ration	ing)		
	*1,*2	$10kHz < f \le 50kHz$		± (10 % of reading $+$ 1 % of rati	ng)		
	Measurem	ent range			120 % of rating			
urrent easurement	Resolution		0.06 A	0.07 A	0.08 A	0.09 A	0.10 A	
	Resolution						I.	
PEAK)	Accuracy *1,*3				± 0.5 % of rating			
leasureme rotection F vervoltage iterface	nt time (Aper	rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	± 0.5 % of rating 100 μs to 3600 s			
Measureme Protection F Overvoltage Interface	nt time (Aper eatures protection,	rture) Overcurrent protect	ion, Overheat protection, Pow	rer limit (sink power)				
Protection Forevervoltage Interface ISS232C, Gl	nt time (Aper eatures protection,	rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)				
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Measureme Protection F Dvervoltage Interface RS232C, Gl General Dperating to Storage tem	protection, or protec	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow	20 9	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condense			
Protection F Dvervoltage Interface RS232C, Gf General Deprating to Deprating his Storage term Storage hun	nt time (Apericatives) protection, or protection, o	Overcurrent protect AN ange e gge primary circuit tput terminals primary circuit	ion, Overheat protection, Pow	20 9	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condensa -25 °C to 70°C	n)		
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fleasurement for the control of the	nt time (Apericatives) protection, or protection, o	overcurrent protect AN ange e e gge primary circuit tput terminals primary circuit s e output terminals primary circuit tput terminals primary circuit tput terminals	500 Vdc,	20 9 9 500 Vdc, 30 500 Vdc, 0.142 MΩ or greater	100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condensatio) -25 °C to 70°C 0 %rh or less (no condensatio) MΩ or greater (at 70 %rh hun	n) nidity or less) 500 Vdc, 0.111 MΩ or greater		
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fleasurement fleas	nt time (Apericatives) protection, or protection, o	Overcurrent protect AN ange e gge primary circuit tput terminals primary circuit ts e output terminals s *4 primary circuit tput terminals	500 Vdc,	20 9 500 Vdc, 30 500 Vdc, 0.142 MΩ or greater No ab	0 °C to 40 °C 0 °C to 40 °C 6RH to 85 %RH (no condensation 0 %rh or less (no condensation MΩ or greater (at 70 %rh hundensation 500 Vdc, 0.125 MΩ or greater 15 mA or less 100 Aac, 0.1 Ω or less	nn) 500 Vdc, 0.111 MΩ or greater minute at-sensitive fan		
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^{*1 :} At an ambient temperature between 18 °C and 28 °C.

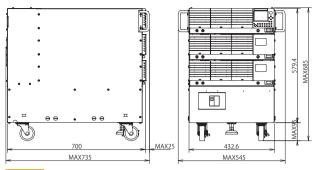
*2 : When the input signal is in the 100 kHz bandwidth and has a crest factor of 3 or less (the measurement time is at least 10 times the input signal period).

*3 : Calibrated with a 1 kHz sine wave.

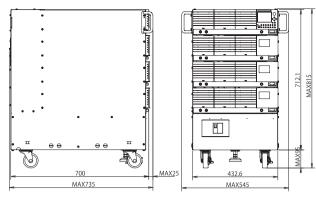
*4 : At 70 %th humidity or less

*5 : At 200V/60Hz for PBZ40-100BP

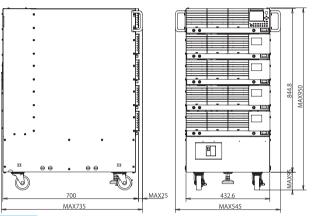
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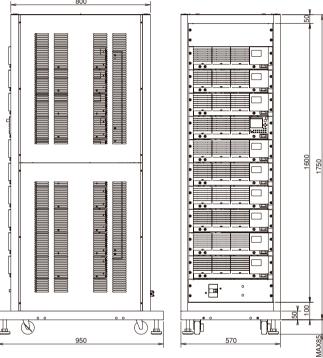
PBZ20-60SR, PBZ40-30SR, PBZ60-20.1SR, PBZ80-15SR



PBZ20-80SR, PBZ40-40SR, PBZ60-26.8SR, PBZ80-20SR Model



PBZ20-100SR, PBZ40-50SR, PBZ60-33.5SR, PBZ80-25SR Model



PBZ20-180BP, PBZ20-200BP, PBZ40-90BP, PBZ40-100BP 350

. 🖪 .. (5) PBZ20-120BP, PBZ20-140BP, PBZ20-160BP Model

Cable option

Model	Part	Remarks
AC8-3P3M-M5C	AC Input Cable	8sq3-core 3m (Only for SR Series)
TL02-PLZ*1	LOW Inductance Cable *2	100A 1m (For PBZ20V,40V,and SR Series)
TL03-PLZ*1	LOW Inductance Cable *2	100A 2m (For PBZ20V,40V,and SR Series)
LIC40-2P1M-M6M6	LOW Inductance Cable *2	50A、1m (For PBZ60V,80V,and SR Series)
LIC40-2P2M-M6M6	LOW Inductance Cable **2	50A、2m (For PBZ60V,80V,and SR Series)

^{*1 : 2}pcs of TL02-PLZ or TL03-PLZ shall be in parallel to be used for PBZ20V BP

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

PBZ40-60BP, PBZ40-70BP, PBZ40-80BP

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^{*2 :} LOW inductance cable can be used only when output is grounded, and cannot be used when not grounded. (For SR Series