



DC POWER SUPPLY 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!



- User-defined waveform generation function
 Sequence function
 Synchronized operation function
- **4** Parallel operation function
- 5 Unipolar mode
- 6 High-speed response100 kHz (CV)
- Z Low ripple noise!

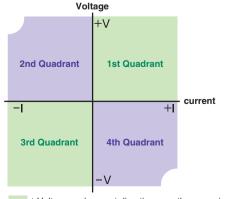
Intelligent Bipolar Power SupplyPBZ seriesPBZ40-10 (±40 V/±10 A)PBZ80-5 (±80 V/±5 A)

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)





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

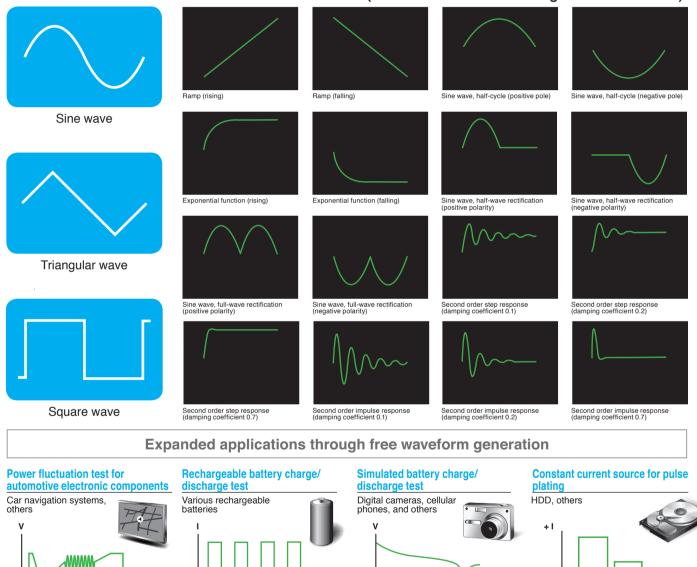
In addition to the basic sine, square and triangular waveforms, the PBZ series is equipped with a user-defined waveform generating function that can register up to 16 waveforms.

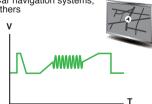
It allows the amplitude, frequency, start phase, frequency sweep and square wave duty to be set as needed.

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 programs.

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

• 3 basic waveforms 16 user-defined waveforms (The waveforms below are registered as defaults.)

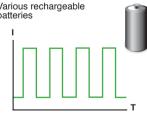




Ripple overlap test

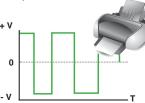
Various electrical storage elements

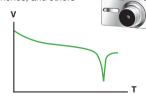




DC motor durability test

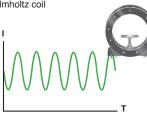
Printers, others

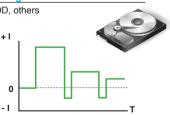




Constant current source for magnetic field generation

Helmholtz coil





Others

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



The script function makes sequences even more convenient!

Concept diagram showing steps and program settings

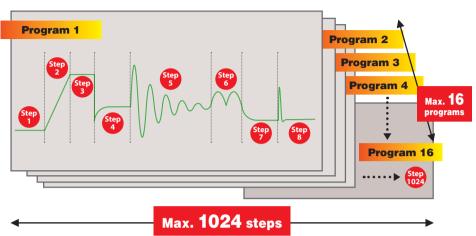
The basic sine, triangular and square waveforms, as well as the 16 userdefined waveforms, can each be set as a sequence step, allowing even complex sequences to be created easily. Sequences are composed of up to 1024 steps.

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

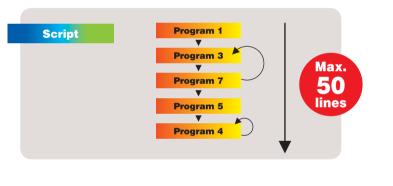
When executing sequences, in addition to executing a single program, the script function also allows multiple programs to be combined and executed as needed.

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.



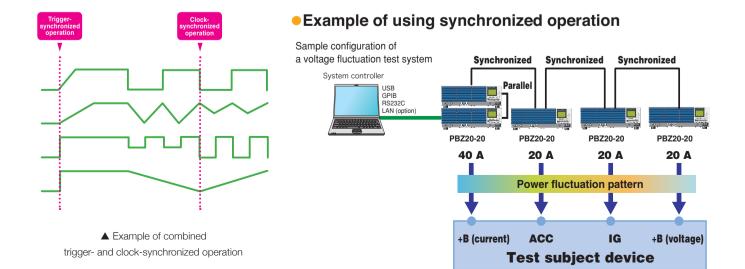
Example of script



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.







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)

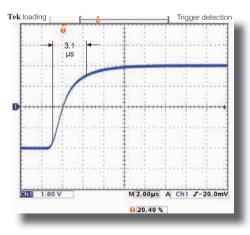
Contents of the Kit: Insulating sheet, OUTPUT terminal connection bar, Load wire screw (M5-10L), Parallel operation signal cable

• 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



100 kHz frequency characteristic (CV). The superior waveform quality with rise and fall with times of $3.5 \,\mu$ 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 5 Unipolar mode

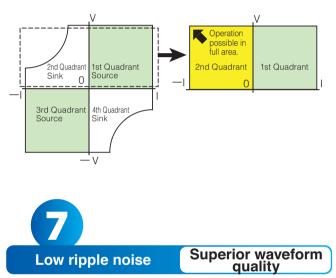
Operation in the full quadrant 2 area

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 guadrant 1st and 2nd guadrants (2 guadrants).

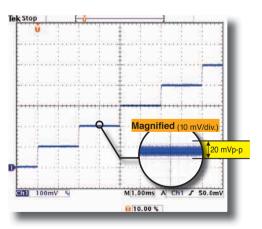
In bipolar mode, there are power restriction areas (PBZ20-20: 100 W, PBZ40-10: 180 W) in 2nd and 4th quadrants. However in unipolar mode, operation is possible in the full area of 2nd quadrants.

Bipolar mode (Four quadrants)

Unipolar mode (Two quadrants)



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

Other features/ characteristics

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)
) (a lite a c	DC + AC	Measurement range (resolution)	120 % of rating (0.001 V)
Voltage measurement			$\pm(0.5~\%$ 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)
		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

*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 no more than 10 times the period of the input signal

*3. Peak value of a 1 kHz sine wave

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.)

0	CV mode	CC mode						
Setting description	Voltage		Current response					
	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			

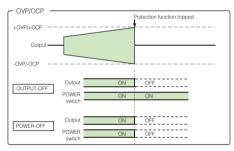
Protection functions (overvoltage, overcurrent, V-I LIMIT, overheating)

• 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.

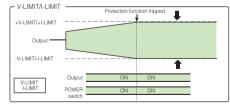
▶ POWER-OFF setting: Output is turned OFF and the POWER switch is also turned OFF.



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.

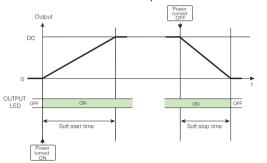
It protects the product when it is used in an environment that exceeds the ambient temperature range for operation, or when sufficient space has not been secured around the intake and exhaust ports.



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

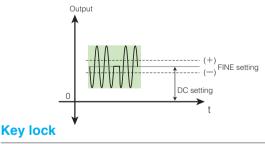
CV: DC setting value ±2.0000 V, resolution 0.0001 V CC: DC setting value ±0.5000 A, resolution 0.0001 A

• 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 \pm rated voltage

Current monitor
 Front panel (BNC terminal)
 0 to ±2 V from 0 A to ± 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.

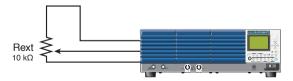


• Front panel EXT SIG IN (BNC terminal) input signal

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 Ω , 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 A0	C, 47 Hz to 63 Hz				
AC input	Current		10 A AC or les	s (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			
Datad autout	Output voltage	±20 V	±40 V	±60 V	±80 V			
Rated output	Output current	±20 A	±10 A	±6.7 A	±5 A			
	Voltage to ground		DC 500 V, grounding perm	hitted at COM terminal only				

Constant voltag	e (CV mode)		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
		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		
DC voltage	1	Fine function		±5 %	of rating			
DC voltage	Setting resolut	ion	0.001 V (Fine function se	etting resolution 0.0001 V)	0.002 V (Fine function set	tting resolution 0.0002 V)		
	Setting accura	cy *2		±(0.05 % of setting	g + 0.05 % of rating)			
	Temp. coefficie	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	ion	0.01 V		0.1 V			
	Setting accura	cy *3		±0.5 %	of rating			
	Setting range			0.01 Hz to	100.00 kHz			
	Setting resolut	ion	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 °					
AC waveloitti	Square wave o	du da z	0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz)					
	Square wave c	July	10 % to 90 % (1 kHz ≤ f < 10 kHz), 50 % fixed (10 kHz ≤ f)					
	Frequency cha	aracteristic *4	DC to 100 kHz (TYP. value)					
	Response *5, *	*6	3.5 µs, 10 µs, 35 µs, 100 µs (TYP. value)					
0	Overshoot			5 % or less	s (TYP. value)			
Constant voltage characteristic	Ripple	(p-p) *7	20 mV (1	YP. value)	30 mV (T	YP. value)		
011010001010	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		$\pm (0.005 \% \text{ of setting} + 1 \text{ mV})$				

*1. The combination of the DC voltage and AC voltage peak values is limited to within the DC voltage setting range

*2.

*3. *4. 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).

*8.

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 *9.

Ine combination of the DC voltage and AC voltage peak values is limited to within the DC voltage setting range. At ambient temperature of 18 °C to 28 °C At ambient temperature of 28 °C, 14 Hz sine wave, response 3.5 µs, 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 µs, rated load) Rise time / fail time (at rated load, excepting output ON/OFF) Frequency characteristic determined by the set response (frequency band = 0.35 / 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. *6.

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

Constant current (CC mode) PB720-20 Bipolar 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 Setting range Unipolar mode ±5 % of rating Fine function DC current Setting resolution 0.001 A (Fine function setting resolution 0.0001 A) Setting accuracy *2 ±(0.3 % of rating) ±(100 ppm/°C of rating) (TYP. value) Temp. coefficient 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 Setting range *1 AC current 0.01 A Setting resolution Setting accuracy *3 ±0.5 % of rating Setting range 0.01 Hz to 100.00 kHz 0.01 Hz Setting resolution AC frequency Setting accuracy ±200 ppm Sweep Linear, log 100 µs to 1000 s (resolution 100 µs) Sweep time Туре Sine wave, square wave, triangular wave, user-defined waves (16 waves) 0 ° to 359 Start phase AC waveform 0.1 % to 99.0 % (f < 100 Hz), 1 % to 99 % (100 Hz \leq f < 1 kHz) Square wave duty 10 % to 90 % (1 kHz \leq f < 10 kHz), 50 % fixed (10 kHz \leq f) Frequency characteristic *4 DC to 10 kHz (TYP. value) DC to 5 kHz (TYP. value) DC to 10 kHz (TYP. value) 35 μs, 100 μs, 350 μs, 1 ms (TYP. value) 70 μs, 100 μs, 350 μs, 1 ms (TYP. value) 35 µs, 100 µs, 350 µs, 1 ms (TYP. value) Response Constant current Overshoot 5 % or less (TYP. value) characteristic Ripple noise (rms) *7 3 mA (TYP, value) Load effect *8 ±(0.01 % of setting + 1 mA) Source effect *9 ±(0.01 % of setting + 1 mA) *1. The combination of the DC current and AC current peak values is limited to within the DC current setting range. *2. At ambient temperature of 18 °C to 28 °C

*3

At ambient temp. 18 °C to 28 °C, 100 Hz sine wave, response 35 µs, 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 35µs, 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) *9



Measurement display function		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 of r	rating) (TYP. value)			
	AC	Measurement range (resolution)		120 % of rating	g/CF (0.001 V)			
Voltage mea-	DC + AC	Measurement range (resolution)		120 % of rati	ing (0.001 V)			
surement				±(0.5 % of reading + 0.1 %	o of rating) (5 Hz to 10 kHz)			
	AC, DC + AC	Accuracy *1, *2	±(1 % of reading + 0.2 % of rating) (10 kHz to 50 kHz)					
	00 + 70		±(2% of reading + 0.2 % of rating) (50 kHz to 100 kHz)					
	PEAK	Measurement range (resolution)	120 % of rating (0.01 V)					
	PEAK	Accuracy *1, *3	±(0.5 % of rating)					
		Measurement range (resolution)	120 % of rating (0.001 A)					
	DC	Accuracy *1	±(0.3 % of reading + 0.1 % of rating)					
		Temp. coefficient	±(150 ppm/°C of rating) (TYP. value)					
	AC	Measurement range (resolution)	120 % of rating/CF (0.001 A)					
Current mea- surement	DC + AC	Measurement range (resolution)	120 % of rating (0.001 A)					
Surement	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 kHz to 100 kHz)					
	PEAK	Measurement range (resolution)		120 % of rat	ting (0.01 A)			
	PEAK	Accuracy *1, *3	±(0.5 % of rating)					
Measurement	time	·	100 µs to 3600 s					

*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

Protection functions		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Protection trip *1, *2	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 -VLIM \leq +VLIM \leq +110 % of rtg) or (-110 % of rtg \leq -OVP \leq -1 % of rtg, +1 % of rtg \leq +OVP \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	f rating				
	Protection trip *1, *2	OCP or I-LIMIT	(output limit). Select whether output o	r the POWER switch turns off when C	OCP is activated.			
Overcurrent protection	Setting range	Select wheter (-110 % of rtg \leq -I.LIM \leq -1 % of rtg \leq +1 % of rtg \leq +I.LIM \leq +110 % of rtg) or (-110 % of rtg \leq -OCP \leq -1 % of rtg \leq +1 % of rtg \leq +OCP \leq +110 % of rtg)						
	Setting resolution	0.01 A						
	Setting accuracy	±1 % of rating						
Overheating protection	Protection trip		Turns output off when a	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	PBZ80-5			
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 i	nput	External contact input for output ON/OFF						
Shutdown input			External contact input for POWER switch OFF					
Status output			CV mode, CC mode, c	utput 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			
		CV mode	-20 to +20	-40 to +40	-60 to +60	-80 to +80		
	A secold for a secold	CC mode	-20 S to +20 S	-10 S to +10 S	-6.70 S to +6.70 S	-5 S to +5 S		
	Amplifier 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 %	of rating			
	Max. allowable input	voltage		±12	Vpeak			
	Input impedance			10 kΩ (TYP. value)			
	Terminal			BNC Safety Socket (Common	connects to output COM terminal.)			
	Output voltage			2 V at ra	ted current			
Current monitor Output	Output voltage accu	racy		±1 % of rati	ng (TYP. value)			
Junem monitor Output	Output voltage frequ	iency characteristic		DC to	20 kHz			
	Terminal			BNC Safety Socket (Common	connects to output COM terminal.)			
Clock input	Input voltage			0.5 Vp	o to 5 Vpp			
	Input impedance		1 kΩ (AC coupled) (TYP. value)					
	Lock frequency range		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)					
Clock output	Output impedance		50 Ω (AC coupled) (TYP. value)					
Noon 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					
rigger input	Pulse width		1 µs or more					
nggor input	Delay		1 µs or less					
	Input impedance		10 kΩ (TYP value) (DC coupled)					
	Terminal			(onnected to chassis.)			
	Output level		H level: 2.7 V to 5 V, L level: 0 V to 0.4 V (TTL compatible)					
	Polarity				el, L level			
rigger output	Pulse width				TYP. value)			
	Rise/fall time				s or less			
	Fan-out				series units			
	Terminal			BNC (Common co	onnected to chassis.)			

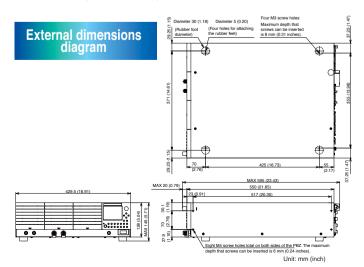
*1. With DC and amplifier gain at maximum

Interface		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
Common specifications	Software protocol	IEEEStd 488.2-1992					
Jorninon specifications	Command language		Conforms to SCPI S	pecification 1999.0.			
R\$232C	Hardware		Conforms to EIA232D specifications. D-SUB 9-pin connector (male) *1 Baud rate: 1200, 2400, 4800, 9600, 19200, 38400 bps Data length: 7 bits or 8 bits, Stop bit: 1 bit or 2 bits, No parity Flow control: 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					
	Hardware	Conforms to USB 2.0 specifications. Communications speed: 12 Mbps (full speed) Socket B type					
JSB	Program message terminator		LF or EOM when receiving	, LF + EOM when sending			
	Device class		Conforms to USBTMC-USB4	88 device class specifications.			
	L la vale va va		IEEE802.3 100Base-TX/10Base-T	Ethernet, IPv4, RJ-45 connector *2			
A b 1 (for other second second	Hardware	Complies with the LXI	Class C, Specification 1.2	Complies with the LXI CI	ass C, Specification 1.4		
AN (factory option)	Communication protocol		VXI-11				
	Program message terminator	LF or END when receiving, LF + END when sending					

Other functions		PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
	No. of programs			16			
Sequence function	No. of steps		Tota	al 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/OFF, used in CV mode				
Operation setting at power C	N	Output ON, start sequence function execution					
Soft start / soft stop			Function ON/OFF Soft start/stop time 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	C amplitude sweep, or Frequency sweep sto	ops at 1000 s. To set a step time longer tha	n 1000 s for those items,compose sever	al steps every 1000 s.			

		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	5 % RH (no condensation)			
	Storage temp./humidity range		-25 to +70 °C / Max. 9	00 % RH (no condensation)			
Grounding polarity			Only the output COM	terminal can be grounded.			
Voltage to ground			DC 5	00 V Max.			
Withstand voltage	Between primary side and chassis		1500 V AC, po ob	normalities at 1 minute			
vitristario voltage	Between primary side and output terminal		1500 V AC, 110 ab	normanues al 1 minute			
	Between primary side and chassis		FOO V/ DC 30 MO or more	(at humidity 70 % BH or loop)			
nsulation resistance	Isulation resistance Between primary side and output terminal		500 V DC, 30 M Ω or more (at humidity 70 % RH or less)				
	Between output terminal and chassis		500 V DC, 1 MΩ or less	(at humidity 70 % RH or less)			
Ground continuity	Between power cord connector, grounding pin <-> chassis	25 A AC, 0.1 Ω or less					
Cooling method			Forced air cooling by a tempe	rature-sensitive variable-speed fan			
Safety *1		Conforms to the following safety requirement. IEC61010-1 Class I Pollution degree2					
Electromagnetic compati	bility (EMC) *1	Conforms to the following safety requirement. IEC61326-1					
External dimensions (larg	est part)		429.5 (16.91") W × 128 (5.0") (145 (5.7")) H × 550 (21.65") (595(23.4")) D mm			
Weight		Approx. 22 kg					
Accessories		Power cord: 1 J1 connector (Socket: 1, Protective covers: 2, Terminals: 30) Heavy object warning labe: 1 Instruction manual: 1					

1. Cannot be used for special-order or modified products.







Option

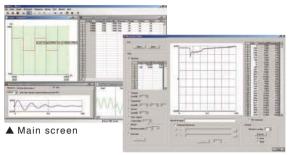




Sequence creation software "Wavy for PBZ"

[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 equiption test conditions for standardized tests
- 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

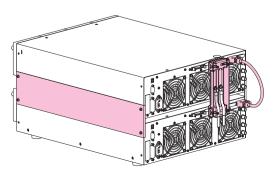
In addition to IEEE488.2, this series is also compatible with SCPI commands. Using the instrument drivers (downloaded from our website) allows control with Excel VBA and LabVIEW, as well as sequence control with the sequence creation software Wavy (Wavy for PBZ). By using the LAN interface, power control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



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





Rack-mounting bracket

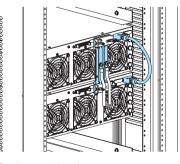
KRB3-TOS (For EIA inch size)
KRB150-TOS (For JIS metric size)

Parallel operation kit

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

Parallel operation kit 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	bars 2	Parallel operation signal cab	le 1



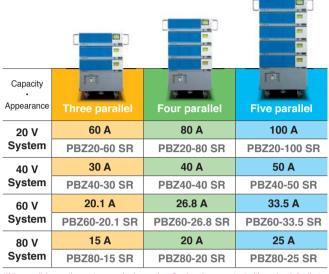
Rack mount bracket KRB3-TOS or KRB150-TOS is required.



line-up

PBZ SR Series line-up

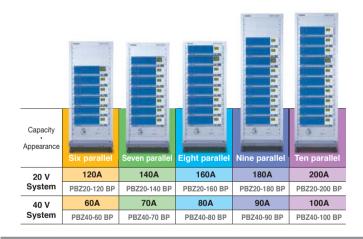
Available in total of 12 models with up to 2 kW of the maximum output power in 4 types of output voltage, \pm 20 V and \pm 40 V and \pm 60 V and \pm 80 V.



*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.



KIKUSUI ELECTRONICS CORPORATION

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KIKUSUI AMERICA, INC.1-877-876-2807 www.kikusujamerica.com

2975 Bowers Avenue, Suite 307, Santa Clara, CA 95051 Phone : 408-980-9433 Facsimile : 408-980-9409

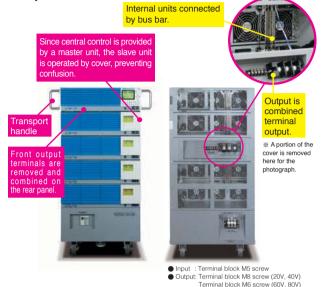
KIKUSUI TRADING (SHANGHAI) Co., Ltd. www.kikusui.cn KIKUSUI Room308,Building 2, No.641,Tianshan Road, Shanghai City, China Phone : 021-5887-9067 Facsimile : 021-5887-9069

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

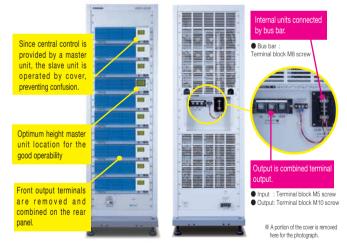
Printed in Japan

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.

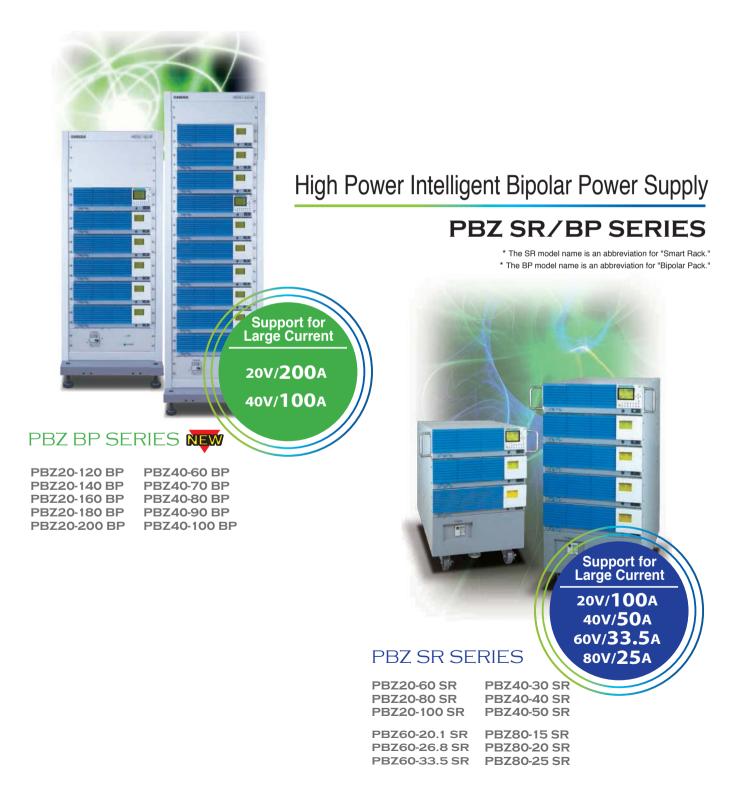


Distributor/Representative

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



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

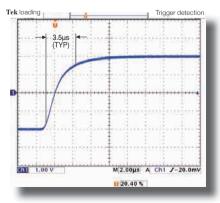
• The PBZ BP series is a series of high-power bipolar DC stabilized power supplies. The PBZ BP series is designed based on the PBZ Intelligent Bipolar power supply series, that supports large currents (up to ±200 A) and is assembled with exclusive rack system (Bipolar Pack).



PBZ-BP Series

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 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.

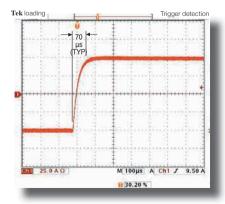
Also, the PBZ SR series is equipped with LAN, USB, GPIB, and RS232C as standard communication interfaces.

- 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.

*1 Slave unit displays its own output current *2 If the alarm for the master unit is cleared, alarms for all units are cleared.

High-speed response(Current)

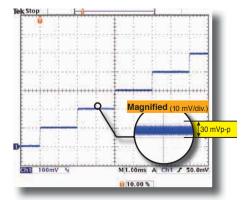
5 kHz frequency characteristic (CV). The superior waveform quality with rise and fall times of 70 μ s which makes it possible to reproduce a variety of waveforms with high precision.



▲ 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)

PBZ-SR Series

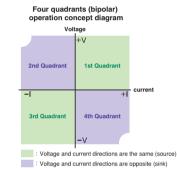
1

Support for Large Current

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

60V/33.5A

80V/25A



line-up

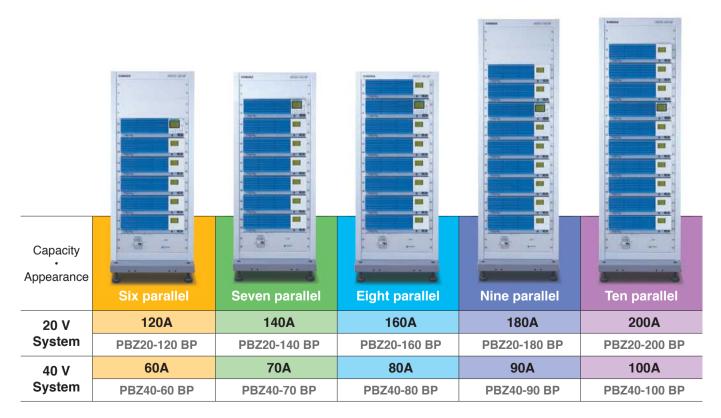
PBZ SR Series line-up

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.

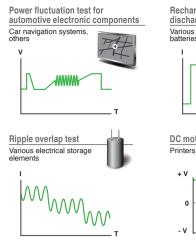
Capacity • Appearance	Three parallel	Four parallel	Five parallel
20 V	60 A	80 A	100 A
System	PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR
40 V	30 A	40 A	50 A
System	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR
60 V	20.1 A	26.8 A	33.5 A
System	PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR
80 V	15 A	20 A	25 A
System	PBZ80-15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

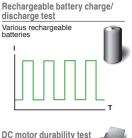
PBZ BP Series line-up

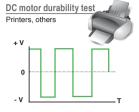
Available in total of 10 models with up to 4kW of the maximum output power in 2 types of output voltage, \pm 20 V and \pm 40 V.

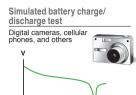


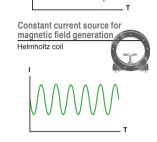
applications Expanded applications through the user-defined waveform generation











Constant current source for pulse plating HDD, others 0 - 1

Others

- Contact resistance test for breakers and relays
- Characteristics test for solenoid

Internal units

valves, coils and others

appearance

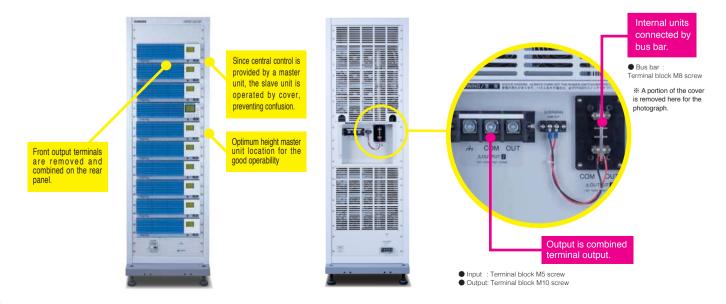
PBZ SR Series

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

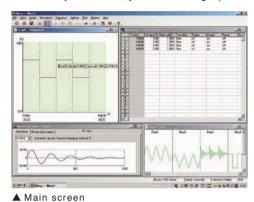
Supporting Kikusui power supplies and electronic loads more intelligently!

Expanding the ideas of engineers "Wavy" sequence creation software

Vavy series

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.





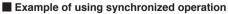
- It makes easier for creation or editing the test condition file required for the sequence operation.
- By using the storage function of test condition data file,
- it enables you to manage the test condition of the standard routine test.
- The progress of execution sequence will be displayed on the "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".

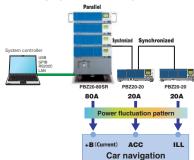
Example of Wavy use ~ Automotive equipment power fluctuation test ~

Achievement of multichannel power fluctuation testing (specification testing)!

[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.





[Car navigation system]

CH1:+BLINE

CH2 : ACC LINE

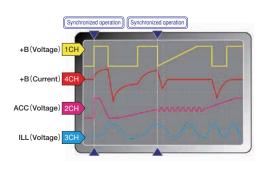
Power is continuously being supplied from the battery to components such as clocks and memory.

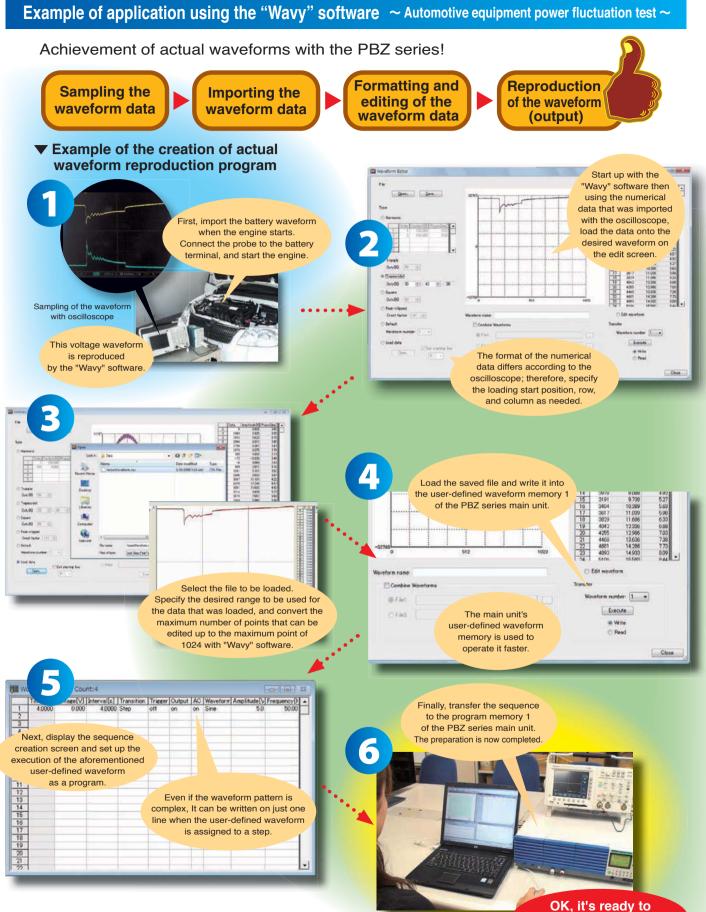
Download !

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.



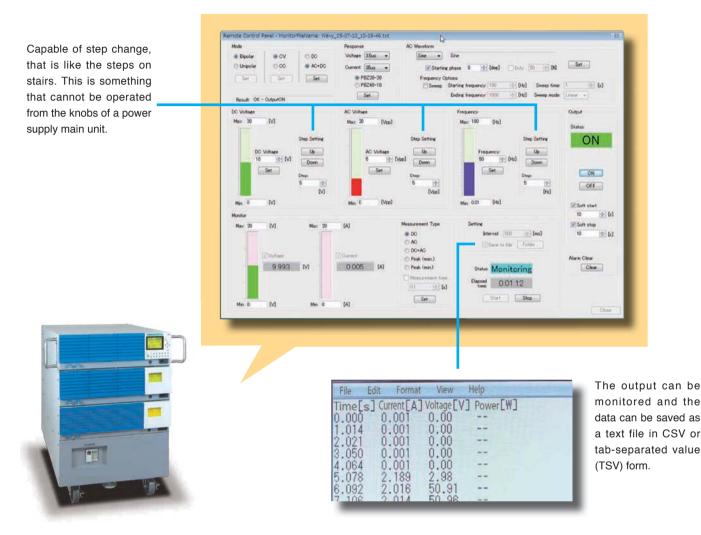


reproduce the waveform!

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

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

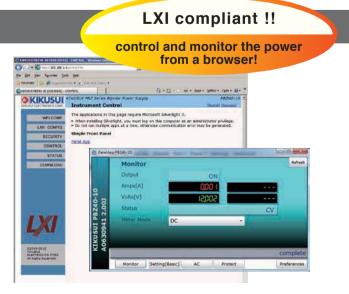
When the "Wavy" software's direct control is used for delicate operations and complicated settings that cannot be performed by the panel operation of the power supply. The "Wavy" software can be used conveniently as a "remote control" for power supplies and electronic loads, and also as a simple data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



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.



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 quaranteed

An randing only voltage 200 Vacb 240 Vac Values 180 Vacb 240 Vac Propurey range 15 Aac or less 20 Aac or less 200 Aac or less						me is 30 minutes (condition w nance is not guaranteed.					
110 Vie be 250 Vie 110 Vie be 250 Vie 25 Also these <	nput / Outpu	ıt		PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR		
An and a set of the s			_								
pic allow Display mode 29 April Isis 29 April Isis 19 April Isis 19 April Isis 29 April Isis 29 April Isis 20 April Isisis 20 April Isisisisi 20 Ap		Voltage rar	ige			180 Vac t	o 250 Vac				
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mode mode 2000 VA or less 2000 VA or less 2000 VA or less 2000 VA or less 4000 VA 2000 VV 1000 V 2000 VV 1000 VV 2000	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		
Prover factor Log M		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 les		
program ISON W		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		
by change ± 23 V ± 40 V ± 40 A ± 40 A ± 60		Power factor				0.95 TYP (when the i	nput voltage is 200 V)				
Learner		Power		1200 W	1200 W 1600 W 2000 W 1200 W 1600 W						
Auge of Control Control Per spanol control terminals on the grounded. state Value (Value) 0.000 K On the acquire COM terminal can be grounded. state Control terminal can be grounded. 0.000 K On the acquire COM terminal can be grounded. state Control terminal can be grounded. 0.000 K O to the (105 % of rating) Provide Provide 0.000 K O to the (105 % of rating) Provide State are are 1 0.000 K O to the folder state or are 100 ppn / Cd rating (TMP) Provide State are are 1 0.01 V 0.1 V 0.1 V Provide State are are 1 0.0 V pr to (210 % of rating) pp 0.1 V pr to (210 % of rating) pp Provide State are are 1 0.0 V pr to (210 % of rating) pp 0.1 V pr to (210 % of rating) pp Provide State are are 2 0.0 H to 1000.00 M E (300 (TMP) 0.0 V pr to (210 % of rating) pp Provide State are are 2 0.0 H to 1000.00 M E (300 (TMP) 0.0 M (TMP) State are are 2 State are are 2 0.0 M (TMP) 0.0 M (MP) State are are 2 State fareare 1 0.0 M (MP)	utput rating				± 20 V ± 40 V						
building Biolatin Villey 00004 Only the audput's COM terminal can be grounded. Ansatz Villey Biolatin rode				± 60 A	± 80 A	± 100 A	± 30 A	± 40 A	± 50 A		
Instant Voltage E00 Volta		Output terr	ninal			Rear panel ou	itput terminals				
Setable ange 1/ ange 1/ ange 1/ ange 1/ ange 1/ Prior tealure Protection of the protection of th	utput terminai	Isolation Ve	oltage		500 \	/dc Only the output's C	OM terminal can be grou	inded.			
signal bit is product mode in the field in the	onstant Vol	tage (CV)									
			Bipolar mode			0 V to ± (105	5 % of rating)				
Provide Provid			Unipolar mode			0 V to + (105	5 % of rating)				
Percentation 0.001 V 0.0001 V bit the fine feature) Accuracy "2 = 0.001 V Temperature coefficient = 0.01 V Vertified Settable range "1 0 Vp-to (210 % of rating) p.p. Vertified Settable range '1 0 Vp-to (210 % of rating) p.p. Prequency "Settable range '1 0 Vp-to (210 % of rating) p.p. 0.1 V Prequency "Settable range '1 0.01 V 4.0 5 % of rating Prequency "Resolution 0.01 H2 to 100.00 Hz (3 dB) (7 HY) Resolution 0.01 H2 to 100.00 Hz (3 dB) (7 HY) Resolution Settable range '1 Resolution (0.00 Hz (3 dB) (7 HY) Resolution (0.00 Hz (3 dB) (7 HY) Settable range '1 (0.00 Hz (10 S ko rating)) Settable range '1 0.000 A 0.005 Å Rouge '1'10 0.000 A 0.005 Å 0.003 A Settable range '1 0.000 A 0.005 Å 0.003 A Rouge '1'10 0.000 A 0.000 A 0.000 A 0.000 A Rouge '1'10 0.000 A 0.000 A 0.000 A 0.000 A Rouge '1'10 0.000 A 0.000 A 0.000 A 0.000 A 0.000 A Rouge '1'10 0.000 A 0.000 A 0.000 A 0.000 A 0.000 A Rouge '1'10 <td></td> <td>range *1</td> <td>Fine feature</td> <td></td> <td></td> <td>± 5% 0</td> <td>f rating</td> <td></td> <td></td>		range *1	Fine feature			± 5% 0	f rating				
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Accuracy *13 ± 0.5 % of rating Frequency Settable range 0.01 Hz to 100.00 kHz Frequency Settable range 0.01 Hz to 100.00 kHz Frequency Settable range 0.01 Hz to 100.00 kHz Prequency 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 Overshoot *16 5 % or less (TYP) 5 mA Inde effect *18 ± (0.01 % of setting + 1 mA) Source effect *19 ± (0.01 % of setting + 1 mA) Source effect *19 0.01 Hz sequency resolution 0.01 Hz sequency resolution 0.01 Hz sequency turcurcurcurcurcurcurcurcurcurcurcurcurcu	C current	Current	Resolution *12	0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A		
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$\frac{ esponse ^{+1}(TYP) }{ powerhoid content of the sum of the DC voltage is limited by the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ powerhoid content of the sum of the DC voltage is limited by the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ powerhoid content of the sum of the DC voltage is limited by the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage's settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TYP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the DC voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the sum of the bod voltage is settable range. \frac{ esponse ^{+1}(TTP) }{ temperture between 18^{+1}(Content of the sum of the bod voltage is limited by the DC volta$		Frequency	Settable range			0.01 Hz to	100.00 kHz				
Image: Second Secon		Frequency	response *14	E	C to 10 kHz (-3 dB) (TY	P)	[DC to 5 kHz (-3 dB) (TYF	?)		
Image: Constant of the constant	anatant	Response	*15 (TYP)	3	5 μs, 100 μs, 350 μs, 1 r	ns	70	0 μs, 100 μs, 350 μs, 1 r	ns		
Arracteristics5 mALoad effect *18 $\pm (0.01 \% \text{ of setting + 1 mA})$ Source effect *19 $\pm (0.01 \% \text{ of setting + 1 mA})$ Common characteristicsequency resultion0.01 Hzequency curacy $\pm 200 \text{ ppm}$ equency Texp $\pm 200 \text{ ppm}$ Linear and logarithmicSine wave, square wave, triangle wave, and 16 user-defined arbitrary waveformsOto 359°Square wave duty cycle0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)		Overshoot	*16			5 % or le	ss (TYP)				
Load effect *18 ± (0.01 % of setting + 1 mA) Source effect *19 ± (0.01 % of setting + 1 mA) Common characteristics 0.01 % of setting + 1 mA) equency resultion 0.01 Hz equency resultion ± 200 ppm equency resultion £ 200 ppm Yeep Linear and logarithmic Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)		Ripple nois	e (rms) *17			5 ו	mA				
common characteristics equency resolution 0.01 Hz equency Accuracy ± 200 ppm weep Linear and logarithmic Type Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)	ומומטנטווטווטט	Load effect	*18		± (0.01 % of setting + 1 mA)						
0.01 Hz equency		Source effe	ect *19			± (0.01 % of s	etting + 1 mA)				
$\pm 200 \text{ ppm}$ Linear and logarithmic weep Linear and logarithmic Type Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f) The peak value of the sum of the DC voltage is limited by the DC voltage's settable range. *6 : Under no bad or rated load. The peak value of the sum of the CC voltage is limited by the DC voltage's settable range. 16 : Under no bad or rated load. The measurement frequency bandwidth is 10 Hz to 20 MHz (at the output terminals). 18' The measurement frequency bandwidth is 10 Hz to 10 MHz (at the output terminals).	C common	characterist	tics								
veep Linear and logarithmic Yupe Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)	requency re	esolution				0.0	l Hz				
veep Linear and logarithmic Yupe Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)	requency A	ccuracy				± 200) ppm				
Type Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms aveform Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)	weep										
Start phase 0 to 359° Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f)	•	Туре			Sine wave, sou		-	trary waveforms			
Square wave duty cycle 0.1 % to 99.9 % (f < 100 Hz), 1 % to 99 % (100 Hz ≤ f < 1 kHz), 10 % to 90 % (1 kHz ≤ f < 10 kHz), and fixed to 50 % (10 kHz ≤ f) 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. *6 : Under no load or rated load. 1 kHz sine wave, 3.5 µs response. *8 : The measurement frequency bandwidth is 10 Hz to 10 MHz (at the output terminals).	/aveform		9					· · · · ·			
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. 1 kHz sine wave, 3.5 µs response. *8 : The measurement frequency bandwidth is 10 Hz to 10 MHz (at the output terminals). *8 : The measurement frequency bandwidth is 10 Hz to 1 MHz (at the output terminals).		· · ·		0 1 % to 90 0 %	6 (f < 100 Hz) 1 % to 00			< 10 kHz) and fixed to 50) % (10 kHz < f)		
At an ambient temperature between 18 °C and 28 °C. *7 : The measurement frequency bandwidth is 10 Hz to 20 MHz (at the output terminals). 1 kHz sine wave, 3.5 µs response. *8 : The measurement frequency bandwidth is 10 Hz to 1 MHz (at the output terminals).	. The neck yet								5 /5 (10 MIZ = 1)		
	: At an ambien	t temperature b	etween 18 °C and 28 °C.	and the minister by the DO voltag	Sources Fairgo.	*7 : The measurement fr	equency bandwidth is 10 Hz to 2				
				age to the external signal input v	roltage is -3 dB				% to 100 % of the current r		

*4 : A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB

4 . 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 2.5 µz, and when a rated load is connected).
*5 : The rise or fall time (at rated load; excluding when output is turned on and off). The frequency tesponse is based on the specified response setting (frequency bandwidth = 0.35/the rise time). Rise time: The time it takes for the output voltage is of the fraing when the output voltage is charged from 0 V to the rated voltage. Fall time. The time it takes for the output current to 14 from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 A.

*9 : 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).
 *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	out voltage			200 Vac t	o 240 Vac			
	Voltage rar	ige			180 Vac t	o 250 Vac			
	Frequency	range			47 Hz t	o 63 Hz			
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	
1	Inrush curr	ent	120 Apeak or less	160 Apeak or less	200 Apeak or less	120 Apeak or less	160 Apeak or less	200 Apeak or less	
	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	
			2700 VA OI less	3000 VA UI IESS			3000 VA OI IESS	4500 VA 01 less	
	Power factor Power				0.95 TYP (when the i				
			1206 W	1608 W	2010 W	1200 W	1600 W	2000 W	
Dutput rating				± 60 V			± 80 V		
	Current		± 20.1 A	± 26.8 A	± 33.5 A	± 15 A	± 20 A	± 25 A	
Output terminal	Output tern	ninal			Rear panel ou	tput terminals			
aipar torrinia.	Isolation Vo	oltage		500 V	dc Only the output's C	OM terminal can be grou	nded.		
Constant Vol	tage (CV)								
		Bipolar mode			0 V to ± (105	5 % of rating)			
	Settable	Unipolar mode			0 V to + (105	5 % of rating)			
	range *1	Fine feature			±5% 0	frating			
DC voltage	Resolution	<u>I</u>			0.002 V (0.0002 V	-			
	Accuracy *	2			± (0.05 % of setting				
		e coefficient			± 100 ppm / °C				
	remperatur								
		Settable range *1			0 Vp-p to (210				
AC voltage	Voltage	Resolution			0.1				
		Accuracy *3			± 0.5%	-			
	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			
Constant	Overshoot	*6			5 % or le	ss (TYP)			
oltage	Ripple	(p-p) *7			40 mV	(TYP)			
haracteristics		(rms) *8			6 r	nV			
	Load effect	*9			± (0.005 % of s	setting + 1 mV)			
			± (0.005 % of setting + 1 mV) ± (0.005 % of setting + 1 mV)						
	Source effe	ect *10			± (0.005 % of s	setting + 1 mV)			
Constant cur	Source effe	ect *10	_	_	± (0.005 % of s	setting + 1 mV)	_		
Constant cur		Γ					_		
Constant cur		Bipolar mode			0 A to ± (105	% of rating)			
Constant cur	rent (CC)	Bipolar mode Unipolar mode			0 A to ± (105 0 A to ± (105	% of rating) % of rating)			
	rent (CC) Settable range *1	Bipolar mode Unipolar mode Fine feature	0.000 Å	0.0044	0 A to ± (105 0 A to ± (105 ± 5 % c	% of rating) % of rating) of rating	0.0014	0.005.4	
	rent (CC) Settable	Bipolar mode Unipolar mode Fine feature	0.003 A	0.004 A	0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A	% of rating) % of rating) of rating 0.003 A	0.004 A	0.005 A	
	rent (CC) Settable range *1 Resolution	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11	0.003 A 0.0003 A	0.004 A 0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % c 0.005 A 0.0005 A	% of rating) % of rating) of rating 0.003 A 0.0003 A	0.004 A 0.0004 A	0.005 A 0.0005 A	
	rent (CC) Settable range *1	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11			0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A	% of rating) % of rating) of rating 0.003 A 0.0003 A			
	rent (CC) Settable range *1 Resolution Accuracy *	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11			0 A to ± (105 0 A to ± (105 ±5 % c 0.005 A 0.0005 A	% of rating) % of rating) of rating 0.003 A 0.0003 A of rating			
	rent (CC) Settable range *1 Resolution Accuracy *	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2			0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A ± 0.3 %	% of rating) % of rating) of rating 0.003 A 0.0003 A of rating of rating) (TYP)			
DC current	rent (CC) Settable range *1 Resolution Accuracy *	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient			$0 \text{ A to } \pm (105)$ $0 \text{ A to } \pm (105)$ $\pm 5 \% \text{ (} 0.005 \text{ A}$ 0.0005 A $\pm 0.3 \%$ $\pm (100 \text{ ppm } / ^{\circ}\text{C}$	% of rating) % of rating) of rating 0.003 A 0.0003 A of rating of rating) (TYP)			
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatur	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 0.05 A	 % of rating) % of rating) f rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 	0.0004 A	0.0005 A	
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Resolution *12	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 0.05 A	 % of rating) % of rating) f rating 0.003 A 0.0003 A of rating of rating) of rating) (TYP) % of rating) p-p 0.03 A of rating 	0.0004 A	0.0005 A	
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Resolution *12 Accuracy *13	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ± 5 % c 0.005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 0.05 A ± 0.5 %	 % of rating) % of rating) % of rating 0.003 A 0.0003 A of rating of rating) of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz 	0.0004 A	0.0005 A	
Constant cur	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % c 0.005 A ± 0.3 % ± (100 ppm / °C 0 Ap-p to (210 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz	% of rating) % of rating 0.003 A 0.0003 A 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	
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatu Current Frequency Response	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP)	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % c 0.005 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	% of rating) % of rating) of rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A 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	
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % c 0.005 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	 % of rating) % of rating) of rating 0.003 A 0.0003 A of rating 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	
Constant	rent (CC) Settable range *1 Resolution Accuracy * Temperatul Current Frequency Response Overshoot Ripple nois	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % 0 0.005 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	i % of rating) i % of rating) of rating 0.003 A 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	0.0004 A	0.0005 A	
C current	rent (CC) Settable range *1 Resolution Accuracy * Temperatul Current Frequency Frequency Frequency Response Overshoot Ripple nois Load effect	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % 0 0.005 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 5 r ± (0.01 % of s	i % of rating) i % of rating) of rating 0.003 A 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	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Frequency Response Overshoot Ripple nois Load effect Source effet	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	0 A to ± (105 0 A to ± (105 ±5 % 0 0.005 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	i % of rating) i % of rating) of rating 0.003 A 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	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ 0 \ A \ to \ \pm \ (105 \\ 10 \ E \ 5 \ \% \ c \ \end{array}$	% of rating) % of rating) frating 0.003 A of rating of rating of rating) of rating) of rating) of rating) 0.003 A of rating 0.003 A of rating 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	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ 0 \ A \ to \ \pm \ (105 \\ 10 \ E \ 5 \ \% \ c \ \end{array}$	i % of rating) i % of rating) of rating 0.003 A 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	
DC current	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist seolution	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ 0 \ A \ to \ \pm \ (105 \\ 10 \ E \ 5 \ \% \ c \ \end{array}$	% of rating) % of rating) of rating 0.003 A 0.0003 A of rating of rating) of rating) of rating) of rating) of rating) % of rating) 0.003 A of rating 0.003 A of rating) 0.03 A of rating 100.00 kHz (-3 dB) (TYP) .350 μs, 1 ms sss (TYP) nA etting + 1 mA) etting + 1 mA) Hz	0.0004 A	0.0005 A	
AC current AC current Constant current haracteristics AC common Frequency re	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist seolution	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105) \\ 0 \ A \ to \ \pm \ (105) \\ 1 \ \pm \ 5 \ \% \ c \\ \hline \end{array}$	% of rating) % of rating) of rating 0.003 A of rating of rating of rating) (TYP) % of rating) (P-P 0.03 A of rating) % 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) Hz ppm	0.0004 A	0.0005 A	
AC current AC current Constant current haracteristics AC common Frequency re	rent (CC) Settable range *1 Resolution Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist seolution	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 e coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ 0 \ A \ to \ \pm \ (105 \\ \pm \ 5 \ \% \ c \ \end{array} \\ \begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ \pm \ 5 \ \% \ c \ \end{array} \\ \begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ \pm \ 5 \ \% \ c \ \end{array} \\ \begin{array}{c} 0 \ A \ to \ \pm \ (105 \\ A \ to \ \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.3 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.5 \ \% \ \end{array} $ \\ \begin{array}{c} \pm \ 0.5 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.5 \ \% \ \end{array} \\ \begin{array}{c} \pm \ 0.5 \ \ 0.5 \ \ 0.5 \ \end{array} \\ \begin{array}{c} \pm \ 0.5 \ \ 0.5	 % of rating) % of rating) % of rating 0.003 A 0.003 A 0.003 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	
AC current AC current Constant current haracteristics AC common Frequency re	rent (CC) Settable range *1 Resolution Accuracy *1 Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist ssolution ccuracy	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19 ics	0.0003 A	0.0004 A	$\begin{array}{c} 0 \ A \ to \ \pm \ (105) \\ 0 \ A \ to \ \pm \ (105) \\ \pm \ 5 \ \% \ c \\ \hline 0.005 \ A \\ 0.0005 \ A \\ \pm \ 0.3 \ \% \\ \pm \ 0.3 \ \% \\ \pm \ 0.3 \ \% \\ \hline \pm \ 0.100 \ ppm \ / \ ^C \\ 0 \ Ap-p \ to \ (210) \\ \hline 0.05 \ A \\ \pm \ 0.5 \ \% \\ \hline 0.01 \ Hz \ to \\ \hline DC \ to \ 10 \ HHz \\ \hline 35 \ \mus, \ 100 \ \mus \\ 5 \ \% \ or \ le \\ \hline 5 \ \% \ or \ le \\ 5 \ \% \ or \ le \ s \\ 1 \ 0.01 \ \% \ or \ s \\ 0.01 \ \% \ s \ s \ s \ s \ s \ s \ s \ s \ s$	% of rating) % of rating) of rating 0.003 A of rating of rating of rating of rating of rating 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) etting + 1 mA) l Hz ppm logarithmic and 16 user-defined arbit	0.0004 A	0.0005 A	
Courrent Constant urrent haracteristics Common Frequency re Frequency A Sweep	rent (CC) Settable range *1 Resolution Accuracy * Temperatul Current Frequency Response Overshoot Ripple nois Load effect Source effe characterist ssolution ccuracy Type Start phase	Bipolar mode Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 e (rms) *17 *18 cct *19 ics	0.0003 A	0.0004 A	$\begin{array}{c} 0 \mbox{ A to \pm} (105) \\ 0 \mbox{ A to \pm} (105) \\ \pm 5 \mbox{ o c} (105) \\ \end{array} \\ \hline \begin{tabular}{lllllllllllllllllllllllllllllllllll$	 % of rating) % of rating) % of rating) of rating 0.003 A 0.0003 A of rating) (TYP) % of rating) p-p 0.03 A of rating (TYP) % of rating) p-p 0.03 A of rating (TYP) % of rating (TYP) 350 µs. 1 ms ss (TYP) nA etting + 1 mA) etting + 1 mA) Hz ppm logarithmic and 16 user-defined arbi 359° 	0.0004 A 0.04 A	0.0005 A	

on the relationship with the internal D / A resolution.
*12 : You can set the AC current in 0.01 A steps, but may not change at this resolution depending on the relationship with the internal D/A resolution.
*13 : 100 Hz sine wave, 35 µs/70 µs response, and shorted output.
*14 : 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 of fall time (at rated load; excluding when output is turned on and off). The rise on fall times 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. 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.

18: The change in the 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.

PBZ40-50 SR PBZ20-60 SR PBZ40-30 SR PBZ40-40 SR PBZ20-80 SR PBZ20-100 SR Measurement range 120 % of rating Voltage measurement Resolution 0.001 V (DC) ± (0.05 % of reading + 0.05 % of rating) Accuracy AC 120 % of rating / CF Measurement range DC + AC120 % of rating Voltage Resolution 0.001 V measurement $5 \text{ Hz} \le f \le 10 \text{ kHz}$ (AC,DC + AC) \pm (0.5 % of reading + 0.1 % of rating) Accuracy $10 \text{ kHz} < f \leq 50 \text{kHz}$ \pm (1 % of reading + 0.2 % of rating) 1.*2 50 kHz< f \leq 100kHz \pm (2 % of reading + 0.2 % of rating) 120 % of rating Measurement range Voltage measurement Resolution 0.01V (PEAK) Accuracy *1, *3 ± 0.5 % of rating Measurement range 120 % of rating 0 003 A 0 004 A 0 005 A 0 004 A 0 005 A Resolution 0 003 A Current measurement ± (0.3 % of reading+ Accuracy *1 (DC)0.7 % of rating 1.0 % of rating) 1.3 % of rating) 0.7 % of rating) 1.0 % of rating 1.3 % of rating) Temperature coefficient ± (150 ppm / °C of rating) (TYP) 120 % of rating / CF Measurement AC range DC + AC120 % of rating Current Resolution 0.003A 0.004 A 0.005 A 0 003 A 0.004 A 0.005 A measurement (AC, DC + AC) $5Hz < f \le 10kHz$ ± (3 % of reading + 0.1 % of rating) Accuracy 1.*2 10kHz< f ≤ 50 kHz ± (10 % of reading + 1 % of rating) 120 % of rating Measurement range Current 0.04 A Resolution 0.03 A 0.04 A 0.05 A 0.03 A 0.05 A measurement (PEAK) ± 0.5 % of rating Accuracy *1,*3 100 µs to 3600 s Measurement time (Aperture) Overvoltage protection, Overcurrent protection, Overheat protection, Power limit (sink power) Interface RS232C, GPIB, USB, LAN General 0 °C to 40 °C Operating temperature range Operating humidity range 20 %RH to 85 %RH (no condensation) Storage temperature range -25 °C to 70°C Storage humidity range 90 %rh or less (no condensation) Across the primary circuit and the output terminals 500 Vdc, 30 MΩ or greater (at 70 %rh humidity or less) Insulation Across the primary circuit and chassis resistance 500 Vdc, 500 Vdc, 0.33 MΩ or greater 500 Vdc, 0.20 MΩ or greater Across the output terminals 500 Vdc, 500 Vdc, 500 Vdc. 0.25 MΩ or greater 0.33 MΩ or greater 0.25 MΩ or greater 0.20 MΩ or greater and chassis *4 Across the primary circuit and the output terminals Withstand No abnormalities at 1500 Vac for 1 minute voltage Across the primary circuit and chassis Leakage current (250 V / 60 Hz) 10 mA or less Earth continuity 100 Aac, 0.1 Ω or less Cooling method Forced air cooling using variable-speed, heat-sensitive fan Battery backup Settings are retained when the power is off. At least three years of battery life (at 25 °C) Approx. 110 kg Approx. 130 kg (286.60 lbs) Approx. 160 kg (352.74 lbs) Approx. 110 kg Approx. 130 kg Approx. 160 kg Weight (242.51 lbs) (286.60 lbs) (352.74 lbs) (242.51 lbs) 432.6(17.03") (545(21.46"))W× 432.6(17.03") (545(21.46"))W× 432.6(17.03") (545(21.46"))W× 432.6(17.03") (545(21.46"))W× 432.6(17.03") (545(21.46"))Wx 432.6(17.03") (545(21.46"))Wx Dimensions 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 (maximum) 700(27.56") (735(28.94"))Dmm 700(27.56") (735(28.94"))Dmm 700(27.56") (735(28.94"))Dmm 700(27.56") (735(28.94"))Dmm 700(27.56") (735(28.94"))Dmm 700(27.56") (735(28.94"))Dmm PBZ-SR series manuals : Setup Guide (1 pc.), Quick Reference (Japanese: 1 pc / English: 1 pc.), Safety Information (1 pc.) Accessories J1 connector kit : Socket (1 pc.), Protection covers (2 pairs), Pins (30 pc.) Heavy object warning label (1 pc.), CD-ROM (1 pc.)

*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

Voltage	nt function		PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR	PBZ80-15 SR	PBZ80-20 SR	PBZ80-25 SR	
	Measurem	ent range			120 % (of rating			
	Resolution				0.00	01 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	Resolution	1	0.001 V						
measurement (AC,DC + AC)		5 Hz< f \leq 10kHz	± (0.5 % of reading + 0.1 % of rating)						
(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Accuracy *1, *2 Accuracy *1, *2 $50 \text{ kHz} < f \le 50 \text{ kHz}$			\pm (1 % of reading + 0.2 % of rating)					
	Measurem			\pm (2 % of reading + 0.2 % of rating)					
Voltage measurement				120 % of rating 0.01V					
(PEAK)	Accuracy *	1 *3			± 0.5 %				
	Measurem				120 % (-			
	Resolution		0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A	
Current	Resolution								
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	$5Hz < f \leq 10kHz$			± (3 % of reading	+ 0.1 % of rating)			
	*1,*2	10 kHz< f ≤ 50 kHz			± (10 % of reading	g + 1 % of rating)			
0	Measurem	ent range			120 % (of rating			
Current measurement	Resolution		0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A	
(PEAK)	Accuracy *	1,*3		I	± 0.5 %	of rating	1	1	
Measuremer	nt time (Aper	ture)			100 µs t	o 3600 s			
Protection F	eatures								
RS232C, GF General	ID; 00D; E								
Operating te	mperature r		0 °C to 40 °C						
Operating hu	umidity range	rating temperature range							
Storage tem		•				9 40 °C I (no condensation)			
	perature ran	9			20 %RH to 85 %RF				
Storage hum		9			20 %RH to 85 %RH -25 °C	I (no condensation)			
Storage hum	hidity range Across the	9			20 %RH to 85 %RF -25 °C 90 %rh or less (r	H (no condensation) to 70°C no condensation)			
	Across the and the out	ge primary circuit put terminals		50	20 %RH to 85 %RH -25 °C	H (no condensation) to 70°C no condensation)	ss)		
Storage hum	Across the and the out	ge primary circuit put terminals primary circuit		50	20 %RH to 85 %RF -25 °C 90 %rh or less (r	I (no condensation) to 70°C no condensation)	ss)		
Insulation	Across the and the our Across the and chassi	ge primary circuit tput terminals primary circuit s e output terminals	500 Vdc, 0.33 MΩ or greater	500 0.25 MΩ or greater	20 %RH to 85 %RF -25 °C 90 %rh or less (r	I (no condensation) to 70°C no condensation)	ss) 500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater	
Insulation	Across the and the our Across the and chassi Across the and chassi Across the	ge primary circuit put terminals primary circuit s 9 output terminals s *4 primary circuit		500 Vdc,	20 %RH to 85 %RH -25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc,	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc,	500 Vdc,		
Insulation	Across the and the our Across the and chassi Across the and chassi Across the and the our Across the	primary circuit put terminals primary circuit s output terminals s *4 primary circuit put terminals primary circuit		500 Vdc,	20 %RH to 85 %RH -25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc,	H (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater	500 Vdc,		
Insulation resistance Withstand voltage	Across the and the our Across the and chassi Across the and chassi Across the and the our Across the and the our	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc,	20 %RH to 85 %RH -25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute	500 Vdc,		
Insulation resistance Withstand	Across the and the our Across the and chassi Across the and chassi Across the and the our Across the and the our	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc,	20 %RH to 85 %RH -25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1	H (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater	500 Vdc,		
Insulation resistance Withstand voltage	Across the and the our Across the and chassi Across the and chassi Across the and the our Across the and chassi rrent (250 V	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc,	20 %RH to 85 %RH 25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1 10 mA	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute	500 Vdc,		
Insulation resistance Withstand voltage	Across the and the our Across the and chassi Across the and chassi Across the and chassi Across the and the our Across the and chassi rrent (250 V /	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc, 0.25 MΩ or greater	20 %RH to 85 %RH 25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1 10 mA	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute or less 1 Ω or less	500 Vdc, 0.25 MΩ or greater		
Insulation resistance Withstand voltage Leakage cur Earth continu	Across the and the our Across the and chassi Across the and chassi Across the and chassi Across the and the our Across the and chassi rrent (250 V / uity	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc, 0.25 MΩ or greater Force	20 %RH to 85 %RH 25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1 10 mA 100 Aac, 0	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute or less .1 Ω or less uble-speed, heat-sensitiv	500 Vdc, 0.25 MΩ or greater		
Insulation resistance Withstand voltage Leakage cur Earth contini Cooling met	Across the and the our Across the and chassi Across the and chassi Across the and chassi Across the and the our Across the and chassi rrent (250 V / uity	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s		500 Vdc, 0.25 MΩ or greater Force	20 %RH to 85 %RH 25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1 10 mA 100 Aac, 0 ed air cooling using varia	f (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute or less .1 Ω or less uble-speed, heat-sensitiv	500 Vdc, 0.25 MΩ or greater		
Insulation resistance Withstand voltage Leakage cur Earth continu Cooling metl Battery back	Across the and the our Across the and chassi Across the and chassi Across the and chassi Across the and the our Across the and chassi rrent (250 V / uity	primary circuit put terminals primary circuit s o output terminals s *4 primary circuit put terminals primary circuit s	0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater Forc Settings are retaine Approx. 130 kg	20 %RH to 85 %RH 25 °C 90 %rh or less (r 0 Vdc, 30 MΩ or greater 0 Vdc, 30 MΩ or greater 0.20 MΩ or greater No abnormalities at 1 10 mA 100 Aac, 0 ed air cooling using varia d when the power is off. Approx. 160 kg	t (no condensation) to 70°C to condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 500 Vac for 1 minute or less tble-speed, heat-sensitiv At least three years of back Approx. 110 kg (242.51 lbs)	500 Vdc, 0.25 MΩ or greater e fan attery life (at 25 °C). Approx. 130 kg	0.20 MΩ or greater	

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.

nput / Outpu			PBZ20-120 BP	PBZ20-140 BP	PBZ20-160 BP	PBZ20-180 BP	PBZ20-200 BP			
	Nominal in	put voltage		200 Vac t	o 240 Vac		200 Vac			
	Voltage rar				o 250 Vac		180 Vac to 220 Va			
	Frequency	-			47 Hz to 63 Hz		1			
nput rating	Current		30 Aac or less	35 Aac or less	40 Aac or less	45 Aac or less	50 Aac or less			
1	Inrush curr	ent	240 Apeak or less	280 Apeak or less	320 Apeak or less	360 Apeak or less	400 Apeak or les			
			5400 VA or less	6300 VA or less	7200 VA or less	8100 VA or less	9000 VA or less			
	Power Power factor		0-100 07101 1033		YP (when the input voltage is		0000 VA 01 1655			
			2400 W	2800W	3200 W	3600 W	4000 W			
utput roting	Power Voltage Current		2400 W	2000	± 20 V	3000 W	4000 W			
uput rating			. 1004	±140A	±20 V ±160A	. 190 A	. 2004			
		ninal	± 120A	±140A		± 180 A	± 200A			
utput terminal	Output terr			000 \/d=	Rear panel output terminals	un la se supervise de sel				
	Isolation Ve	bitage		300 Vdc Only	the output's COM terminal ca	in be grounded.				
onstant Vol	tage (CV)									
	Settable	Bipolar mode			0 V to ± (105 % of rating)					
	range *1	Unipolar mode			0 V to + (105 % of rating)					
C voltage		Fine feature			±5% of rating					
0-	Resolution				01 V (0.0001 V for the fine feat					
	Accuracy	[*] 2		± (0	05 % of setting + 0.05 % of ra	ting)				
	Temperatu	re coefficient			± 100 ppm / °C of rating (TYP))				
		Settable range *1			0 Vp-p to (210 % of rating) p-p)				
Cvellere	Voltage	Resolution			0.1 V					
C voltage		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						
onstant	Overshoot	*6			5 % or less (TYP)					
oltage	Ripple	(p-p)			50 mV (TYP)					
-		(rms)			6 mV					
	Load effect	*7	± (0.005 % of setting + 1 mV)							
	Source effe		± (0.005 % of setting + 1 mV) ± (0.005 % of setting + 1 mV)							
Constant cur					(111113),					
		Bipolar mode			0 A to ± (105 % of rating)					
	Settable	Unipolar mode			$0 \text{ A to } \pm (105 \% \text{ of rating})$					
	range *9	Fine feature			± 5 % of rating					
OC current	Resolution		0.006 A	0.007 A	0.008 A	0.009 A	0.010 A			
	lissolution	Fine feature	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A			
	Accuracy		0.0000 A	0.0007 A		0.0009 A	0.0010 A			
	Accuracy *				± 0.5 % of rating	n				
	remperatu	re coefficient			= (100 ppm / °C of rating) (TYF					
		Settable range *9			0 Ap-p to (210 % of rating) p-p					
C current	Current	Resolution *10	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A			
		Accuracy *12			± 0.5 % of rating					
		Settable range	0.01 Hz to 100.00 kHz							
	Frequency	response *13			DC to 8 kHz (-3 dB) (TYP)					
Constant	Response	*14 (TYP)			35 µs, 100 µs, 350 µs, 1 ms					
urrent	Overshoot	*15			5 % or less (TYP)					
haracteristics	Ripple nois	se (rms)			15 mA					
	Load effect	*16			\pm (0.01 % of setting + 1 mA)					
	Source effect *17			± (0.01 % of setting + 1 mA)						
	Source effe	tics								
					0.01 Hz					
C common	characterist									
C common	characterist				± 200 ppm					
C common requency re requency A	characterist				± 200 ppm Linear and logarithmic					
C common requency re requency A	characterist esolution ccuracy			Sine wave, square wave.	Linear and logarithmic	fined arbitrary waveforms				
C common requency re requency A weep	characterist esolution ccuracy Type			Sine wave, square wave,	Linear and logarithmic triangle wave, and 16 user-de	fined arbitrary waveforms				
AC common Frequency re Frequency Ar Sweep Waveform	characterisi esolution ccuracy Type Start phase				Linear and logarithmic	-	to 50.0/ (10.11)			

for more than 3 units in parallel.

*4 : A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB

*4 : 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 5.3 µs, and when a rated load is connected).
*5 : Rise or fall time (at rated load; excluding when output is turned on and oft). 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 04 to the rated voltage. Fall time: The time it takes for the output voltage to rise from 10% to fall from 90% to 10% of the rating when the output voltage is changed from the rated voltage to 0V.

*8 : The change in the output voltage in response to a ±10 % change in the input voltage in reference to the nominal input

o - me 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 0.01A steps, but it may not change at this resolution depending on the relationship with the internal D/A resolution.

nput / Outpu	ut		PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP	PBZ40-100 BP		
	Nominal in	out voltage	P 0240-00 BP		0 240 Vac	PD240-90 DP	200 Vac		
					to 250 Vac		180 Vac to 220 Vac		
	Voltage rar Frequency	-			47 Hz to 63 Hz		100 vac to 220 Va		
out ration		lango	30 Aac or less	35 Aac or less	47 H2 t0 63 H2 40 Aac or less	45 Aac or less	50 Aac or less		
put rating	Current Inrush curr	ant	240 Apeak or less	280 Apeak or less	320 Apeak or less	360 Apeak or less	400 Apeak or less		
						•			
	Power		5400 VA or less	5400 VA or less 6300 VA or less 7200 VA or less 8100 VA or less 9000 VA					
	Power factor Power				YP (when the input voltage is				
	Power Voltage		2400 W	2800W	3200 W	3600 W	4000 W		
stput rating	Voltage			70.4	± 40 V				
	Current		± 60A	±70A	±80A	± 90 A	± 100A		
utput terminal	Output tern			000 V/d= 0=1	Rear panel output terminals	a la constructa d			
	Isolation Vo	onage		300 Vdc Only	y the output's COM terminal ca	n be grounded.			
onstant Vol	Itage (CV)								
	Settable	Bipolar mode			0 V to ± (105 % of rating)				
	range *1	Unipolar mode			0 V to + (105 % of rating)				
C voltage		Fine feature			±5% of rating				
-	Resolution				01 V (0.0001 V for the fine feat	,			
	Accuracy				.05 % of setting + 0.05 % of ra	0.			
	Temperatu	e 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				
onstant	Overshoot	*6			5 % or less (TYP)				
oltage	Ripple	(p-p)			50 mV (TYP)				
aracteristics	noise	(rms)	12 mV						
	Load effect	*7	± (0.005 % of setting + 1 mV)						
	Source effe	ct *8	± (0.005 % of setting + 1 mV)						
onstant cur	rrent (CC)								
	Settable	Bipolar mode			0 A to ± (105 % of rating)				
	range *9	Unipolar mode			0 A to \pm (105 % of rating)				
		Fine feature			± 5 % of rating				
			0.006 A	0.007 A	0.008 A	0.009 A			
C current	rrent Resolution	*10	0.000 A			0.00071	0.010 A		
C current	Resolution	*10 Fine feature	0.0006 A	0.0007 A	0.0008 A	0.0009 A	0.010 A 0.0010 A		
C current	Resolution Accuracy *	Fine feature			0.0008 A ± 0.3 % of rating				
C current	Accuracy *	Fine feature		0.0007 A		0.0009 A			
C current	Accuracy *	Fine feature		0.0007 A	± 0.3 % of rating	0.0009 A			
	Accuracy *	Fine feature		0.0007 A	± 0.3 % of rating t (100 ppm / °C of rating) (TYP	0.0009 A			
	Accuracy * Temperatur	Fine feature 11 e coefficient Settable range *9	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p	0.0009 A	0.0010 A		
	Accuracy * Temperatur Current	Fine feature 11 e coefficient Settable range *9 Resolution *10	0.0006 A	0.0007 A	± 0.3 % of rating £ (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency Frequency	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP)	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP)	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency Frequency Response	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 µs, 100 µs, 350 µs, 1 ms	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency Frequency Response Overshoot	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms)	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs, 1 ms 5 % or less (TYP)	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency Response Overshoot Ripple nois	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs. 1 ms 5 % or less (TYP) 15 mA	0.0009 A	0.0010 A		
C current	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect	Fine feature 11 Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs. 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA)	0.0009 A	0.0010 A		
C current onstant rrent aracteristics C common	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist	Fine feature 11 Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs. 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA)	0.0009 A	0.0010 A		
current onstant rrent aracteristics common equency re	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist	Fine feature 11 Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs. 350 μs. 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)	0.0009 A	0.0010 A		
C current onstant rrent aracteristics C common equency re equency A	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist	Fine feature 11 Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs, 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm	0.0009 A	0.0010 A		
C current constant rrent aracterístics C common equency re equency A	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist esolution accuracy	Fine feature 11 Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs, 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm Linear and logarithmic	0.0009 A	0.0010 A		
C current constant irrent aracteristics C common equency re equency A weep	Accuracy * Temperatur Current Frequency Frequency Response Overshoot Ripple nois Load effect Source effe characterist esolution ccuracy	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17 ics	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs. 1 ms 5 % or less (TYP) 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	0.0009 A	0.0010 A		
C current onstant urrent iaracteristics	Accuracy * Temperatur Current Frequency Response Overshoot Ripple nois Load effect Source effe characterist esolution ccuracy	Fine feature 11 e coefficient Settable range *9 Resolution *10 Accuracy *12 Settable range response *13 *14 (TYP) *15 e (rms) *16 ct *17 ics	0.0006 A	0.0007 A	± 0.3 % of rating ± (100 ppm / °C of rating) (TYP 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz DC to 4 kHz (-3 dB) (TYP) 70 μs, 100 μs, 350 μs, 1 ms 5 % or less (TYP) 15 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm Linear and logarithmic	0.0009 A) 0.09 A fined arbitrary waveforms	0.0010 A		

10 The charge in the output current in response to a charge in the output votage non-to-s to to-s or not so that working erating.
177 The charge in the output current in response to a 10 % charge in the input votage rating in the output voltage is in the range of 10 % to 100 % of the voltage rating).

*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 fallime (at rated load; excluding when output is turned on and off). Rise 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 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.

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,

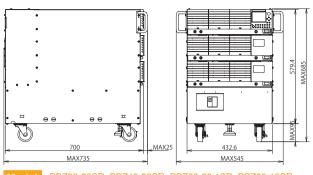
Measureme	nt function		PBZ20-120 BP	PBZ20-140 BP	PBZ20-160 BP	PBZ20-180 BP	PBZ20-200 BP		
Voltage	Measurem	ent range			120 % of rating				
neasurement DC)	Resolution	1			0.001 V				
00)	Accuracy *1 Measurement AC		± (0.05 % of reading + 0.05 % of rating)						
					120 % of rating / CF				
			120 % of rating						
/oltage neasurement	Resolution		0.001 V						
AC, DC + AC)	+ AC) Accuracy *1, *2 $5 \text{ Hz} < f \le 10 \text{ Hz}$ 10 kHz< f ≤ 50 kHz		\pm (0.5 % of reading $+$ 0.1 % of rating)						
				± (1 % of reading + 0.2 % of rating)					
		50 kHz< f \leq 100kHz		± (2 % of reading $+$ 0.2 % of rat	ing)			
oltage	Measurem	ent range			120 % of rating				
easurement	Resolution	I			0.01V				
PEAK)	Accuracy *	1, *3			± 0.5 % of rating				
	Measurem	ent range			120 % of rating				
urrent	Resolution	I	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A		
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)		
	Temperatu	re coefficient		±	⊥ ± (150 ppm / °C of rating) (TYF	P)	1		
	Measuremen	AC			120 % of rating / CF				
	range	DC + AC			120 % of rating				
urrent easurement	Resolution		0.006A	0.007 A	0.008 A	0.009 A	0.010 A		
C,DC + AC)		5Hz <f≦10khz< td=""><td></td><td></td><td>3 % of reading + 0.1 % of rat</td><td></td><td></td></f≦10khz<>			3 % of reading + 0.1 % of rat				
	*1,*2	$10kHz < f \leq 50kHz$			10 % of reading $+$ 1 % of rati				
	Measurem				120 % of rating				
urrent easurement			0.06 A	0.07 A	0.08 A	0.09 A	0.10 A		
			0.0071	0.0771		0.0071	0.1071		
PEAK)	Accuracy *1,*3		± 0.5 % of rating						
,	-				-				
Aeasureme Protection F Overvoltage nterface	nt time (Ape eatures	rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	100 μs to 3600 s				
Measureme Protection F Overvoltage Interface RS232C, GF	nt time (Ape eatures protection,	rture) Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	-				
leasuremen rotection F overvoltage nterface IS232C, Gf ieneral	nt time (Ape eatures protection,	rture) Overcurrent protect AN	ion, Overheat protection, Pow	er limit (sink power)	-				
Measurement Protection F Overvoltage Interface NS232C, Gf Neneral Operating te	nt time (Ape eatures protection, PIB, USB, L	rture) Overcurrent protect AN ange	ion, Overheat protection, Pow		100 μs to 3600 s	ation)			
leasurement rotection F overvoltage nterface (S232C, Gf deneral operating te operating h	nt time (Ape eatures protection, PIB, USB, L	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow		100 μs to 3600 s 0 °C to 40 °C	ation)			
leasurement rotection F overvoltage interface (S232C, Gf interface) (S232C, Gf interface	nt time (Ape reatures protection, PIB, USB, L emperature r umidity rang	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow	20 %	100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condense				
Measuremen Protection F Dvervoltage Interface RS232C, Gf General Dperating to Storage tem	nt time (Ape eatures protection, PIB, USB, L. emperature r umidity rang perature rar nidity range Across the	rture) Overcurrent protect AN ange e	ion, Overheat protection, Pow	20 % 9	0 °C to 40 °C 6RH to 85 %RH (no condensation -25 °C to 70°C 0 %rh or less (no condensation	n)			
Protection F Dvervoltage Interface RS232C, GF General Dperating te Operating h Storage tem	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit	ion, Overheat protection, Pow	20 % 9	100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condensa -25 °C to 70°C	n)			
Aeasurement rotection F Overvoltage Interface AS232C, Gf General Operating the Operating the Operating the Storage hun Storage hun	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou Across the and chass	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals		20 % 9	0 °C to 40 °C 6RH to 85 %RH (no condensation -25 °C to 70°C 0 %rh or less (no condensation	n)	500 Vdc, 0.1 MΩ or greater		
Aeasuremen Protection F Overvoltage Interface S2322C, Gf Aeneral Operating the Operating the Operating the Operating the Storage hum Storage hum Storage hum Storage hum Storage hum	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range Across the and chass Across the and chass Across the	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output 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 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	nidity or less) 500 Vdc, 0.111 MΩ or greater			
leasuremen rotection F hvervoltage nterface (S232C, Gf eneral operating hu torage tem torage hun sulation esistance	nt time (Ape eatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou Across the and chass Across the and chass	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit	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 condensation -25 °C to 70°C 0 %rh or less (no condensation MΩ or greater (at 70 %rh hur 500 Vdc,	nidity or less) 500 Vdc, 0.111 MΩ or greater			
leasuremen rotection F vervoltage iterface S232C, Gf eneral operating te perating hit torage tem torage hun isulation asistance	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range Across the and the ou Across the and chass Across the and the ou Across the	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	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 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	nidity or less) 500 Vdc, 0.111 MΩ or greater			
leasuremen rotection F vervoltage terface S232C, Gf eneral perating te perating te perating hit torage tem torage hun sulation sistance	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range Across the and the ou Across the and chass Across the and the ou Across the and the ou Across the and chass rrent (250 V	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	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 condensa -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	nidity or less) 500 Vdc, 0.111 MΩ or greater			
leasuremen rotection F vervoltage terface S232C, Gf eneral perating te perating te perating hu torage tem torage hun sulation sistance fithstand oltage eakage cur arth contin	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range Across the and the ou Across the and chass Across the and the ou Across the and chass rrent (250 V uity	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	500 Vdc,	20 9 9 500 Vdc, 30 0.142 MΩ or greater No ab	100 μs to 3600 s 0 °C to 40 °C 6RH to 85 %RH (no condensations) -25 °C to 70°C 0 %rh or less (no condensations) MΩ or greater (at 70 %rh hur 500 Vdc, 0.125 MΩ or greater normalities at 1500 Vac for 1 15 mA or less	nidity or less) 500 Vdc, 0.111 MΩ or greater minute			
leasuremen rotection F vervoltage terface S232C, Gf eneral perating ter perating hit torage term torage hun sullation sistance fithstand oltage cakage cur arth contin ooling met	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou Across the and chassi Across the and chassi Across the and the ou Across the and chassi	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	500 Vdc,	20 9 9 500 Vdc, 30 0.142 MΩ or greater No ab	100 μs to 3600 s 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	nidity or less) 500 Vdc, 0.111 MΩ or greater minute	0.1 MΩ or greater		
leasuremen rotection F vervoltage iterface S232C, Gf eneral operating te perating hit torage tem torage hun isulation assistance //ithstand oltage eakage cur arth contin ooling met attery back	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou Across the and chassi Across the and chassi Across the and the ou Across the and chassi	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	500 Vdc,	20 9 9 500 Vdc, 30 0.142 MΩ or greater No ab	100 μs to 3600 s 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 bling using variable-speed, he	nidity or less) 500 Vdc, 0.111 MΩ or greater minute	0.1 MΩ or greater		
leasuremen rotection F ivervoltage iterface (S232C, Gf ieneral operating te operating hu torage tem torage hun isulation assistance	nt time (Ape reatures protection, PIB, USB, L emperature r umidity range perature rar nidity range Across the and the ou Across the and chassi Across the and chassi Across the and chassi rrent (250 V uity hod	rture) Overcurrent protect AN ange e e primary circuit tput terminals primary circuit is e output terminals primary circuit tput terminals primary circuit is primary circuit	500 Vdc, 0.166 MΩ or greater	20 9 9 500 Vdc, 30 0.142 MΩ or greater No ab Forced air coc Settings are retained when th Approx. 280 kg	100 μs to 3600 s 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 1	nidity or less) 500 Vdc, 0.111 MΩ or greater minute at-sensitive fan years of battery life (at 25 °C) Approx. 340 kg	0.1 MΩ or greater		

*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

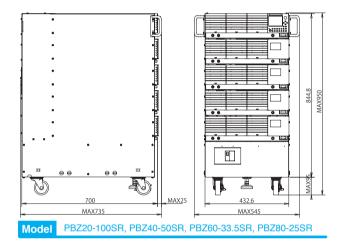
Measuremer	ni function		PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP			
Voltage	Measurem	ent range			120 % of rating				
neasurement	Resolution				0.001 V				
DC)	Accuracy *	1		± (0.0	05 % of reading + 0.05 % of r	ating)			
	Measurement	AC			120 % of rating / CF				
	range	DC + AC			120 % of rating				
Voltage	Resolution	1	0.001 V						
AC, DC + AC)		5 Hz< f \leq 10kHz		\pm (0.5 % of reading \pm 0.1 % of rating)					
NO, DO 1 NO)	Accuracy		$\pm (1\% \text{ of reading } + 0.1\% \text{ of rating})$						
	*1, *2 10 kHz <f <math="">\leq 50kHz 50 kHz<f <math="">\leq 100kHz</f></f>				2 % of reading $+$ 0.2 % of rat				
	Measurem			- (·	120 % of rating				
oltage leasurement	Resolution				0.01V				
PEAK)					± 0.5 % of rating				
	Accuracy *				*				
	Measurem	-			120 % of rating				
Current	Resolution		0.006 A	0.007 A	0.008 A	0.009 A	0.010 A		
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		E	(150 ppm / °C of rating) (TYF	²)			
	Measurement	AC			120 % of rating / CF				
urrent	range	DC + AC			120 % of rating				
urrent leasurement	Resolution	1	0.006A	0.007 A	0.008 A	0.009 A	0.010 A		
AC, DC + AC)	Accuracy	5Hz< f ≦ 10kHz		± (;	3% of reading $+$ 0.1 % of rat	ing)	1		
	*1,*2	10kHz< f ≦ 50kHz			10 % of reading + 1 % of rati				
	Measurem			- (120 % of rating				
urrent easurement	-	-	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A		
			0.00 A	0.07 A	± 0.5 % of rating	0.09 A	0.10 A		
PEAK) Accuracy *1,*3				± 0.5 % 01 rating					
,					100				
leasuremen rotection F overvoltage nterface	nt time (Aper eatures protection, (Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)	100 μs to 3600 s		-		
Measuremen Protection F Dvervoltage nterface RS232C, GF General	nt time (Aper eatures protection, (PIB, USB, L/	Overcurrent protect	ion, Overheat protection, Pow	er limit (sink power)					
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Measuremen Protection F4 Dvervoltage Interface RS232C, GF General Dperating te	nt time (Aper eatures protection, (PIB, USB, L/	Overcurrent protect AN ange	ion, Overheat protection, Pow		0 °C to 40 °C 6RH to 85 %RH (no condense	ation)			
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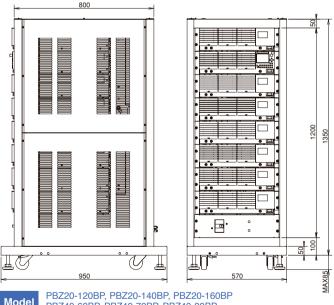
*1 : At an ambient temperature between 18 °C and 28 °C.
*2 : When the input signal is in the 100 kHz bandwidth and has a crest factor of 3 or less (the measurement time is at least 10 times the input signal period).
*3 : Calibrated with a 1 kHz sine wave.
*4 : At 70 %rh humidity or less
*5 : At 200V/60Hz for PBZ40-100BP

dimensions

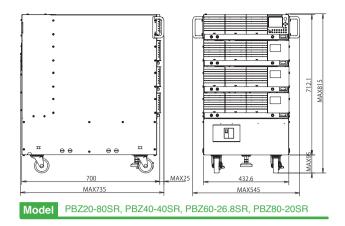


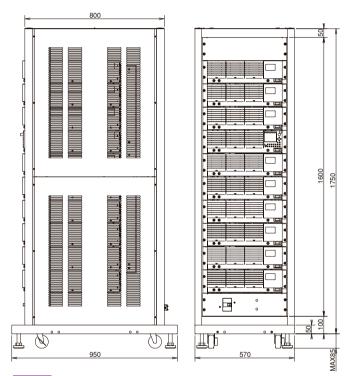
Model PBZ20-60SR, PBZ40-30SR, PBZ60-20.1SR, PBZ80-15SR





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





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

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 : 2pcs of TL02-PLZ or TL03-PLZ shall be in parallel to be used for PBZ20V BP.

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

 KIKUSUI ELECTRONICS CORPORATION
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 Image: Strain St

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