



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

# Intelligent Bipolar Power Supply **PBZ Series**

Peak current output 6 times the rating (PBZ20-20A) NEW 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) High Current Support: PBZ SR series (20 V/100 A, 40 V/50 A, 60 V/ 33.5 A, 80 V/25 A) 12 models High Current Support: PBZ BP series (20 V/200 A, 40 V/100 A) 10 models USB, GPIB and RS232C standard digital interface LAN option available (LXI compliant)



# Real&Flexibile



- 1 Waveform Generati
- **2** Sequence Feature
- Synchronized Oper
- **4** Parallel Operation
- 5 Unipolar Mode
- 6 High-Speed Respon
- Low Ripple Noise!

🚹 Peak Current Outpu

\*1. 100 kHz for standard models (PBZ20-20, 40-10, 60-6.7, \*2. 150 kHz for "A" models (PBZ20-20A) \*3. "A" models (PBZ20-20A)

# Intelligent Bipolar Power Supply PBZ20-20A

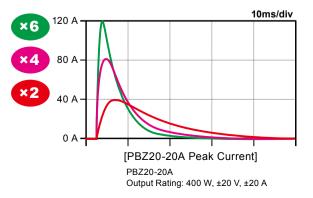
#### USB, GPIB and RS232C standard digital interface (LAN option available)

The PBZ20-20A Intelligent Bipolar Power Supply takes a fresh new look at bipolar power supply design, allowing for peak current up to 6 times that of the rated output. As a result, peak currents exceeding the 20 A rating can be easily compensated with a single unit, eliminating the need to connect multiple units in parallel, and greatly cutting costs.

The primary source of energy for modern-day vehicular components is the car battery, but factors such as electronic circuit chattering as well as inrush caused by the engine can be cause for concern. Disturbances in the power source caused by these factors make programming and evaluating power supply fluctuation waveforms an absolute must.

The PBZ20-20A Intelligent Bipolar Power Supply has the high speed response to meet the demands of voltage fluctuation tests (Pulse2b, Pulse4, etc.) for international standards such as the ISO16750-2 and ISO7637-2 as well as for the increasingly complicated fluctuation waveform tests required by automotive

manufacturers. The PBZ20-20A is also equipped to easily comply with the steady increase of electronic components per vehicle (high power capacitors, etc.) and total current (esp. peak current) required in modern-day automotive testing.



Intelligent power supply providing arbitrary waveform generation and accurate power simulation!

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# imum test simulation!

#### on

ation

se 100 kHz<sup>\*1</sup>/150 kHz<sup>\*2</sup>(CV)





#### t (6x Rating)<sup>\*\*</sup>

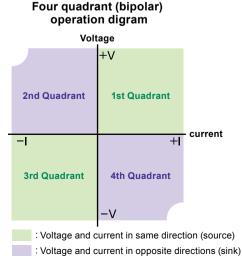
80-5)

### Intelligent Bipolar Power Supply PBZ series PBZ40-10 (±40 V/±10 A) PBZ60-6.7 (±60 V/±6.7 A) PBZ40-10 (±40 V/±10 A) PBZ80-5 (±80 V/±5 A)

#### USB, GPIB and RS232C standard digital interface (LAN option available)

The PBZ is a series of bipolar DC programmable power supplies that can smoothly pass through zero to provide  $\pm$  voltage and  $\pm$  current without changing the output terminals. The PBZ is capable of 4-quadrant operation, meaning that it is capable of both sourcing and sinking power, ideal for driving both inductive and capacitive loads.

This power supply comes equipped with a built-in function generator, allowing for easy waveform and sequence generation. The output current of the PBZ can be expanded among multiple units by using the synchronization feature. The switching + linear design of the PBZ has allowed for a 40% reduction in weight (approx. 22 kg) while achieving extremely high-speed operation (CV mode: 100 kHz) and low ripple noise.



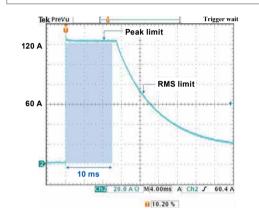


#### Inrush current output up to 6 times the rating! (CV mode)

"A" models

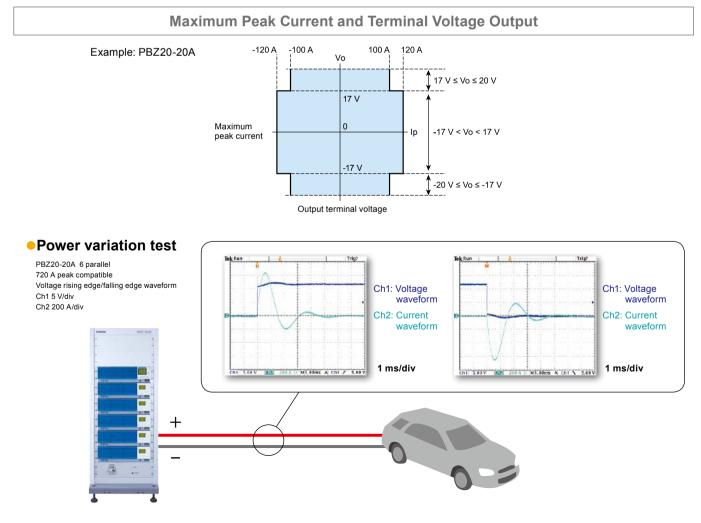
The PBZ20-20A is capable of generating a short-term peak current up to 6 times the rating when current response is set to 1ms in CV mode. Other response settings will activate the current limit and allow the operator to safely use the device without 6x peak current output. When current response is set to 1ms, the PBZ20-20A automatically decreases response speed and allows for peak current ouput while the current limit is deactivated. This means that the current function will be active at all times when short-term peak current is not output and will have no effect on current response in CC mode. Short-term peak current output is available in both bipolar and unipolar mode.

#### Recommended Peak Current Duration and Range (Protection)



We recommend a maximum peak current output of up to 6 times the rating (5 times depending on output voltage) within a duration of 10ms (blue area on left). A minimum interval of at least 1 second is required between peak currents, as shorter intervals can cause hardware malfunction. The figure on the left shows the peak and rms current limits when the output is shorted.

- In the peak limit area, peak current is capped at 105% of 6x the rating and can be retained for at least 10 ms.
- There are cases where normal waveforms cannot be generated within the peak limit area. Current limits will still be active ensuring the safety of the operator.
- In the rms limit area, the peak current is limited by the rms value. The current will decrease down to the rated current according to the duration settings.
- When sinking power in quadrant 2 and 4, power will be limited after 10 ms and the regular current limit will be activated.

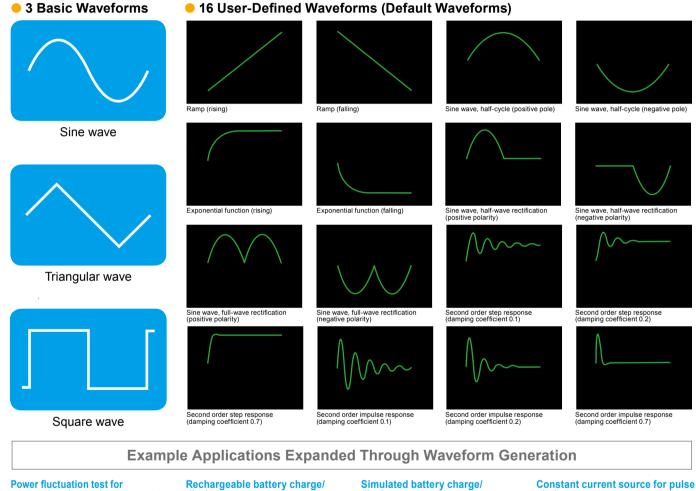






#### Built-in function generator for customizable waveform generation!

In addition to basic sine, square and triangular waveforms, the PBZ allows the operator to customize up to 16 user-defined waveforms with the internal function generator. Amplitude, frequency, start phase, frequency sweep and square wave duty can be programmed as needed. 16 user-defined waveforms can be freely edited and registered to the PBZ internal memory. The sequence feature (see P6) allows for each step in an individual waveform to be customized in detail for a maximum of 1024 steps among 16 programs. \*Waveform editing requires proprietery software (Wavy for PBZ). (See P14.)

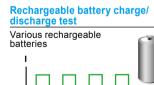


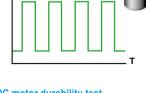
automotive electronic components Car navigation systems, others

Ripple overlap test

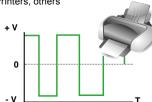
Various electrical storage elements

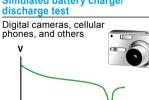


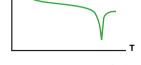




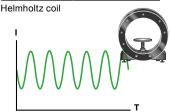
DC motor durability test Printers, others

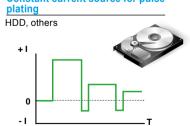






#### Constant current source for magnetic field generation





#### Others

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



easy creation of complex sequences.

15 programs. (1024 - 8 = 1016 steps)

needed.

The basic sine, triangular and square waveforms

(as well as the 16 user-defined waveforms) can be programmed per sequence step, allowing for

Sequences are composed of up to 1024 steps,

which can be allocated among a maximum of 16

programs. The script function allows for multiple

programs to be combined and executed as

As shown on the right, Program 1 uses 8 steps, allowing for 1016 steps to be allocated among the remaining

The script function allows the operator to specify the sequence and number of repitions

for set programs. A maximum of 50 rows can be assigned to 1 script for both CV and CC mode.

#### Sequence customization for convenient waveform generation!

#### Step and Program Settings

Synchronized Operation

Seamless sequence execution with no deviation between synchronized units!

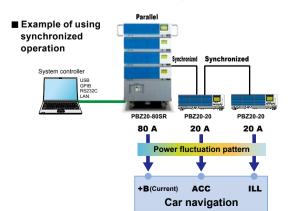
This feature allows the user to synchronize the output of multiple PBZ units when executing a sequence, preventing any deviations from occuring even during a long sequence. \*Excluding start up delay of up to 1 µs

Script

#### Synchronized Multichannel Voltage Variation Tests for Automotive Standards!

#### [Multichannel voltage variation test example]

Power for automotive vehicles is supplied by the battery, but the power is activated by multiple internal electronic components (+B $\rightarrow$ ACC $\rightarrow$ IG) turning ON/OFF in a specific order. There are an extremely large number of electronic components that can cause instability within the automobile, including engine start-up and electrical circuit chattering. Therefore, problems caused by this instability such as power interruptions and fluctuations can be planned for and avoided by performing rigorous voltage variation tests on all channels for automotive electronic components.



#### [Car navigation system]

**Program 1** 

**Program 3** 

Program 7

▼

Program 5 T Program 4



CH1:+B LINE Power continuously supplied by the battery is distributed to components such as clocks and memory devices.

Мах

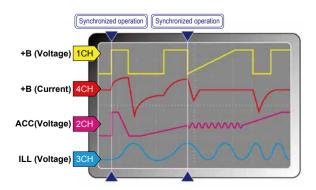
50

lines

**CH2 : ACC LINE** The power supply for car navigation systems are turned ON via the ignition switch's ACC contact. After the switch is activated, real-time navigation, radio, etc. become possible.

CH3 : ILL LINE

Backup power supply line (ILL) that directly pulls up +B, IG, and ACC.







This feature allows the user to increase the output current by connecting multiple units in parallel. This setup can easily be completed with 2 identical models and the optional parallel operation kit. For systems that require more than 3 units, please refer to the PBZ-SR Series (P16). For systems that require more than 6 units, please contact your local Kikusui distributor. (Standard models)

#### Parallel operation kit (option)

The optional accessory kit for connecting 2 PBZ units in parallel (same model). Please select the following kit that best fits your testing requirements. \*Bracket is not included for PK02-PBZ and PK03-PBZ

#### For Desktop use: PK01-PBZ

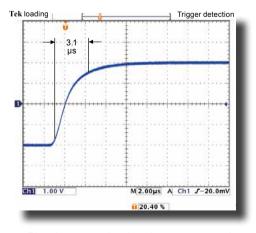
Contents: Bracket, Insulating sheet, OUTPUT terminal connection bar, Parallel output terminal cover, Bracket screws (M4-8L), Spacer, Load wire screw (M5-10L), Parallel operation signal cable

- For Rack-mounted system: PK02-PBZ (For EIA inch size) Contents: 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: Insulating sheet, OUTPUT terminal connection bar, Load wire screw (M5-10L), Parallel operation signal cable



100 kHz/150 kHz frequency specifications (CV).

The excellent waveform quality combined with the ultra-fast rise/ fall time of  $3.5 \ \mu s$  allow the PBZ to reproduce a wide variety of waveforms of the highest quality.



▲ Rise time example when 3.5 µs response is set

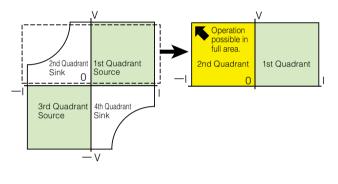
\*1. 100 kHz for standard models (PBZ20-20, 40-10, 60-6.7, 80-5) \*2. 150 kHz for "A" models (PBZ20-20A)

150 kHz for "A" models (PBZ20-20A)



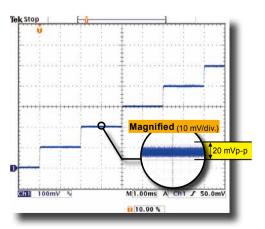
The unipolar function is unique to the PBZ. "Unipolar mode" allows the PBZ to apply current in both directions (source and sink) while current flows in a single direction. As seen in the diagram below, this feature allows the user full operation in the 1st and 2nd quadrants. Unipolar mode allows the user to bypass power restrictions (PBZ20-20: 100 W, PBZ40-10: 180 W) present in the 2nd and 4th quadrants when in bipolar mode.

Bipolar mode (Four quadrants) Unipolar mode (Two quadrants)





The excellent waveform quality of the PBZ minimizes noise effects on simulations and pulse-driven devices.



 Sample of actual 0.1 V step waveform Ripple 2 mVrms, noise 20 mVp-p(PBZ20-20)

\*PBZ40-10 :Ripple 4 mVrms, noise 20 mVp-p PBZ60-6.7 :Ripple 4 mVrms, noise 30 mVp-p PBZ80-5 :Ripple 4 mVrms, noise 30 mVp-p

#### 40 % lighter than previous models

The switching + linear design of the PBZ has allowed for a 40% reduction in weight (approx. 22 kg) resulting in the improved accessibility and portability of bench-top test systems.

#### **Expanded measurement**

Built-in measurement features allow for easy testing without the need for multimeters and other measurement devices. Furthermore, the measurement time TRIG signal allows the operator to program measurement start time and measurement delay time.

Setting ite	em		
	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 )
Voltage	DC+AC	Measurement range (resolution)	120 % of rating (0.001 V )
measure- ment			±(0.5 % of reading + 0.1 % of rating) (5 Hz to 10 kHz)
inon	AC and DC+AC	Accuracy *1, *2	±(1 % of reading + 0.2 % of rating) (10 Hz to 50 kHz)
			±(2 % of reading + 0.2 % of rating) (50 Hz to 100 kHz)
	PEAK	Measurement range (resolution)	120 % of rating (0.01 V )
	PEAK	Accuracy *1, *3	±(0.5 % of rating)
	DC	Measurement range	120 % of rating (0.001 A )
	DC	Accuracy *1	±(0.3 % of reading + 0.1 % of rating)
	AC	Measurement range (resolution)	120 % of rating/CF (0.001 A)
Current measure-	DC+AC	Measurement range (resolution)	120 % of rating (0.001 A)
ment	AC and	A 2011/2011 \$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)
Measurem	nent time		100 µs to 3600 s

Measurement time

\*1. At ambient temperature of 18 °C to 28 °C

#### **Memory functions**

#### Preset memory

Stores setting conditions most often used. Three memory slots are available for CV mode and CC mode. Settings stored are limited to DC signal and AC signal.

Setup memory

This can be used as general memory storing all basic settings. Up to 10 memories can be set, regardless of mode.

#### **CC/CV** selection feature

Select CV mode when using constant-voltage, and CC when using constant-current. The voltage and current uppower/lower limits utilize a "V" and "I" limit function.

#### **Response switching**

Response speeds can be switched in both CV and CC mode. The output voltage and current rise/fall time will be effected by the response settings. (Response time setting indicates rise/fall time.)

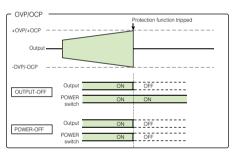
Setting description	CV mode Voltage		CC mode Current response					
	response	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	3.5 µs	35 µs	70 µs	35 µs	35 µs			
Selectable	10 µs	100 µs	100 µs	100 µs	100 µs			
values	35 µs	350 µs	350 µs	350 µs	350 µs			
	100 µs	1 ms	1 ms	1 ms	1 ms			
Factory default setting	3.5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

#### Protections (overvoltage, overcurrent, V-I LIMIT, overheating)

• Overvoltage and overcurrent protection

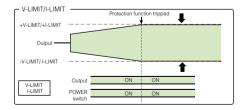
This protection activates when the output voltage/current exceeds the protective trip points. The protective trip points can be set seperately in both positive (+) and negative (-) polarities. The following three options can be selected when a protection is activated.

- ► OUTPUT-OFF : Output is turned OFF.
- ▶ PPOWER-OFF: Output and POWER switch are turned OFF.



#### ► V/I-LIMIT

Prevents voltage and current exceeding the protection trip points. (Output is not turned OFF.) The V-I/LIMIT function allows the unit to automatically switch from CV mode to I-LIMIT and from CC mode to V-LIMIT. This also allows the unit to automatically switch from CV mode to CC mode, and from CC mode to CV mode.



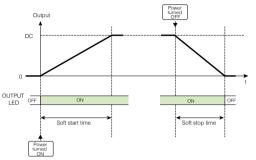
#### Overheating protection

This protection is activated when the PBZ temperature reaches abnormally high levels. This protection protects the product from test environments that exceed the ambient temperature, or when sufficient ventilation has not been provided for the intake and exhaust ports.



#### Soft start and soft stop function

The soft start feature allows the user to gradually increase the output to a given value when turned ON. With soft stop, the user can gradually decrease the output from a given value to 0 when turned OFF. Soft start and stop times can only be set for DC settings. If the OUTPUT key is pressed while soft start or soft stop is in progress, the operation will be cancelled and output turned OFF.



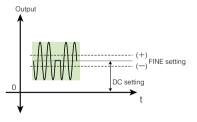
#### **Fine settings function**

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

#### Input range

- PBZ20-20A/PBZ20-20
   CV: DC setting value ±1.0000 V, resolution 0.0001 V
  - CC: DC setting value ±1.0000 Å, resolution 0.0001 Å
- 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 ±0.0000 V, resolution 0.0001 A
- 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  $\pm 4.0000$  V, resolution 0.0002 V CC: DC setting value  $\pm 0.2500$  A, resolution 0.0001 A



#### **Key lock**

- 3 levels of key lock are available.
- Disable all key operations other than OUTPUT, RECALL, and A,B,C memory functions.
- Disable all key operations other than OUTPUT.
- Disable all key operations. (excluding KEY LOCK (SHIFT + LOCAL) KEY)

#### **Remote sensing function**

Remote sensing function stabilizes the load terminal output voltage by compensating for voltage drops caused by resistance in the load wires. This function can be used in CV mode with one-way compensation of up to approx. 0.5 V. Please make sure to select load wires with sufficient current capacity so that load wire voltage drop does not exceed the voltage compensation.

#### **Output voltage/current monitor**

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

The PBZ series is compatible with two types of input signals.

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



Front panel EXT SIG IN (BNC terminal) input signal.
 Composed of a bipolar amplifier using EXT SIG IN (BNC terminal) as the input signal.

The amplifier gain, polarity (inverted, non-inverted) and offset can be set with a maximum input voltage of ±12 Vpeak, maximum input impedance of 10 k $\Omega$ , and a common terminal connected to OUTPUT terminal COM.

#### External signal input (external resistance control)

DC signal of the internal signal source can be controlled using an external variable resistor to change the standard voltage and voltage ratio. With CV and CC mode, the operator can control both voltage and current, respectively. The output is the sum of the external resistor setting, DC panel setting, and remote controller setting.



#### Temperature-sensitive fan motor

Internal temperature is detected and maintained with an internal fan cooling system.

#### Interface

USB, GPIB and RS232C standard digital interface. For LAN (option), see P13.

#### **Specifications**

AC input, rat	ed output		PBZ20-20A	PBZ20-20	PBZ40-10				
	Nominal input v	oltage		100 Vac to 240 Vac, 50 Hz to 60 Hz					
AC input	Voltage and free	quency range		90 Vac to 250 Vac, 47 Hz to 63 Hz					
	Current			10 Aac or less (when connected to a rated load)					
	Inrush current (	I ms or more)	20 Apeak or less(input 100 V) 40 Apeak or less(input 200 V)						
	Power		900 VA or less (when connected to a rated load)						
	Power factor		0.95 TYP (when the input voltage is 100 V and when connected to a rated load)						
	Output power			400 W			400 W		
	Output voltage		±20 V	±20 V	±40 V	±60 V	±80 V		
Rated output	Output current		±20 A	±20 A	±10 A	±6.7 A	±5 A		
		Peak current *1	±120 Apeak (TYP) *2 ±100 Apeak (TYP) *3	_	—	-	_		
	Isolation voltage			500 Vdc, Only the output's COM terminal can be grounded.					

\*1. Set the peak current output time to 10 ms or more, the repetition interval to 1 s or mode, and the CV or CC mode current response to 1 ms.

\*2. (-17 V < Output terminal voltage < +17 V) \*3. (-20 V ≤ Output terminal voltage ≤ +20 V)

Constant volt	age (CV mode	9)	PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5	
		Bipolar mode	0.000 V to ±21.000 V	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 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 feature			±5 % of rtg			
	Setting resolut	ion	0.00	01 V (0.0001 V for the fine feat	ure)	0.002 V (0.0002 V	for the fine feature)	
	Setting accura	cy *2		±	0.05 % of setting + 0.05 % of r	tg)		
	Temperature coefficient				±100 ppm/°C of rtg (TYP)			
	Setting range *	*1	0.00 Vpp to 42.00 Vpp	0.00 Vpp to 42.00 Vpp	0.00 Vpp to 84.00 Vpp	0.00 Vpp to 126.00 Vpp	0.00 Vpp to 168.00 Vpp	
AC voltage	Setting resolut	ion	0.0	1 V		0.1 V		
	Setting accuracy *3			±0.5 % of rtg				
	Setting range		0.01 Hz to 200.00 kHz	0.01 Hz to 100.00 kHz				
	Setting resolut	ion			0.01 Hz			
	Setting accura	су			±200 ppm			
	Sweep		Linear and logarithmic					
	Sweep time		100 µs to 1000 s (resolution of 100 µs)					
	Туре		Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms					
AC waveform	Start phase		0 ° to 359 °					
	Square wave d	luty cycle	0.1 % to 99.9 % (f	< 100 Hz), 1 % to 99 % (100 H	Iz ≤ f < 1 kHz), 10 % to 90 % (1	kHz $\leq$ f < 10 kHz), and fixed to	50 % (10 kHz < f)	
	Frequency res	ponse *4	DC to 150 kHz (TYP)		DC to 100	kHz (TYP)		
	Response *5, *	*6	2.3 µs, 6.7 µs, 23 µs, 67 µs (TYP)		3.5 µs, 10 µs, 35	μs, 100 μs (TYP)		
Constant	Overshoot				5 % or less (TYP)			
voltage	Ripple noise	(p-p) *7		20 mV (TYP)		30 mV	(TYP)	
characteristics	Tripple Holse	(rms) *8	2 mV (TYP)	2 mV (TYP)	4 mV (TYP)	4 mV (TYP)	4 mV (TYP)	
	Load effect *9				$\pm(0.005$ % of setting + 1 mV)			
	Source effect *	10			±(0.005 % of setting + 1 mV)			

\*1. The peak value of the sum of the DC voltage and AC voltage is limited by the DC voltage's settable range. \*2. At an ambient temperature between 18 °C and 28 °C.

\*3. At an ambient temperature between 18 °C and 28 °C, with a 1 kHz sine wave, 3.5  $\mu s$  response, and no load.

\*4. A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB (when the reference frequency is 1 kHz, the response is 3.5 µs, 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 response is based on the specified response setting (frequency bandwidth = 0.35/the rise time).

\*6. 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 0 V to the rated voltage.

Fall time: The time it takes for the output voltage to fall from 90 % to 10 % of the rating when the output voltage is changed from the rated voltage to 0 V. The measurement frequency bandwidth is 10 Hz to 20 MHz (at the output terminals).

\*8. The measurement frequency bandwidth is 10 Hz to 1 MHz (at the output terminals). \*9. The change in the output voltage in response to a change in the output current from 0 % to 100 % of the current rating (measured 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).

Constant cur	ent (CC mode	e)	PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7 PBZ80-5		
	Setting range	Bipolar mode Unipolar mode	0.000 A to ±21.000 A	0.000 A to ±21.000 A	0.000 A to ±10.500 A	0.000 A to ±7.035 A	0.000 A to ±5.250 A	
DO autorat	'	Fine feature			±5 % of rtg			
DC current	Setting resolut	ion		0.00	01 A (0.0001 A for the fine feat	ure)		
	Setting accuracy *2				±0.3 % of rtg			
	Temperature coefficient				±100 ppm/°C of rtg (TYP)			
	Setting range *	'1	0.00 App to 42.00 App	0.00 App to 42.00 App	0.00 App to 21.00 App	0.00 App to 14.07 App	0.00 App to 10.50 App	
AC current	Setting resolution				0.01 A			
	Setting accuracy *3				±0.5 % of rtg			
	Setting range		0.01 Hz to 200.00 kHz	0.01 Hz to 200.00 kHz 0.01 Hz to 100.00 kHz				
	Setting resolut	ion	0.01 Hz					
AC frequency	Setting accura	су	±200 ppm					
	Sweep		Linear and logarithmic					
	Sweep time		100 µs to 1000 s (resolution of 100 µs)					
	Туре		Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms					
AC waveform	Start phase				0 ° to 359 °			
	Square wave d	uty cycle	0.1 % to 99.9 % (f	< 100 Hz), 1 % to 99 % (100 H	z ≤ f < 1 kHz), 10 % to 90 % (1	kHz $\leq$ f < 10 kHz), and fixed to	50 % (10 kHz < f)	
	Frequency res	ponse *4	DC to 15 kHz (TYP)	DC to 10 kHz (TYP)	DC to 5 kHz (TYP)	DC to 10	kHz (TYP)	
	Response *5, *	6	23 µs, 67 µs, 230 µs, 0.67 ms (TYP)	35 µs, 100 µs, 350 µs, 1 ms (TYP)	70 µs, 100 µs, 350 µs, 1 ms (TYP)	35 µs, 100 µs, 35	50 μs, 1 ms (TYP)	
Constant current	Overshoot *7				5 % or less (TYP)			
characteristics	Ripple noise (r	ms) *8			3 mA (TYP)			
2	Load effect *9				±(0.01 % of setting + 1 mA)			
	Source effect *	10		±(0.01 % of setting + 1 mA)				
		e DC current and AC veen 18 °C and 28 °C	C current is limited by the DC curre		time:The time it takes for the out ent is changed from 0 A to the rate		0 % of the rating when the output	

\*3. At an ambient temperature between 18 °C and 28 °C, with a 100 Hz sine wave, 35 µs response, and shorted output.

4. 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, and a rated load is connected). The frequency response changes according to the load impedance. When the load impedance increases, the frequency response decreases.

\*5. The rise or fall time (at rated load; excluding when output is turned on and off). The rise and fall times change according to the load impedance.

Fall time: The time it takes for the output current to fall from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 A.
\*8. The measurement frequency bandwidth is 10 Hz to 1 MHz (when the output voltage is in the range of 10 % to 100 % of the rated output voltage). \*7. Under no load or rated load.

\*9. The change in the output current in response to a change in the output voltage from 10 % to 100 % of the voltage rating.

\*10.The change in the output current in response to a  $\pm 10\%$  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 ).

• rtg: • setting: • rdng: • rtg/CF:

rdng: Indicates the readout value of a measured result.
rtg/CF: The reated 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 ourrent flows out from the OUT terminal and negative (-) when current flows into the OUT terminal.
The output specifications apply to the rear panel output terminal and chassis terminal. Remote sensing is not being performed. The auxiliary output terminals may not meet the specifications.
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 voltage drop to the PBZ's rated voltage.

Measure	ment dis	play function	PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
		Measurement range (resolution)	±120 % of rtg (0.001 V)							
	DC	Accuracy *1		± (0.05 % of rdng + 0.05 % of rtg)						
		Temperature coefficient	±100 ppm/°C of rtg (TYP)							
Voltage measure- ment	AC	Measurement range (resolution)		±120 % of rtg/CF (0.001 V)						
	DC+AC	Measurement range (resolution)	120 % of rtg (0.001 V)							
	AC and			±(0.5 % of rdng	g + 0.1 % of rtg) in the range of	5 Hz to 10 kHz				
	DC+AC	Accuracy *1, *2	$\pm(1~\%$ of rdng + 0.2 % of rtg) in the range of 10 kHz to 50 kHz							
			$\pm$ (2 % of rdng + 0.2 % of rtg) in the range of 50 kHz to 100 kHz							
	PEAK	Measurement range (resolution)	±120 % of rtg (0.01 V)							
	PEAK	Accuracy *1, *3	±0.5 % of rtg							
		Measurement range (resolution)	±120 % of rtg (0.001 A)							
	DC	Accuracy *1	±(0.3 % of rdng + 0.1 % of rtg)							
		Temperature coefficient	±150 ppm/°C of rtg (TYP)							
Current	AC	Measurement range (resolution)			120 % of rtg/CF (0.001 A)					
measure-	DC+AC	Measurement range (resolution)			120 % of rtg (0.001 A)					
ment	AC and	Accuracy *1, *2		±(3 % of rdng	+ 0.1 % of rtg) in the range of 5	5 Hz to 10 kHz				
	DC+AC	Accuracy 1, 2	$\pm$ (10 % of rdng + 1 % of rtg) in the range of 10 kHz to 100 kHz							
	PEAK	Measurement range (resolution)	±120 % of rtg (0.01 A)							
	PEAK	Accuracy *1, *3	±0.5 % of rtg							
Measurem	nent 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

<b>Protection functio</b>	ns	PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Protection operation *1, *2	OVP or V	-LIMIT (output limit). Select w	hether output or the POWER	switch turns off when OVP is a	ctivated.			
0	Setting range (Bipolar mode)	Select whether (-110 % of	of rtg $\leq$ -V.LIM $\leq$ +V.LIM $\leq$ +11	0 % of rtg) or (-110 % of rtg ≤ -	$OVP \leq -1\%$ of rtg, +1 % of rtg $\leq$	≤ +OVP ≤ +110 % of rtg)			
Overvoltage protection	Setting range (Unipolar mode)	Select	t whether (-1 % of rtg ≤ -V.LIM	$\leq$ +V.LIM $\leq$ +110 % of rtg) or (	+ 1% of rtg $\leq$ +OVP $\leq$ +110 % of	of rtg)			
protection	Setting resolution			0.01 V					
	Setting accuracy		±1 % of rtg						
	Protection operation *1, *2	OCP or I-	LIMIT (output limit). Select w	nether output or the POWER s	witch turns off when OCP is a	ctivated.			
protection *3	Setting range	(-110 % of rtg ≤ -I.LIM ≤ -1%	Select wheter 0 % of rtg $\leq$ -1.LIM $\leq$ -1% of rtg, +1 % of rtg $\leq$ +1.LIM $\leq$ +110 % of rtg) or (-110 % of rtg $\leq$ -OCP $\leq$ -1 % of rtg, +1 % of rtg $\leq$ +OCP $\leq$ +110 % of rtg)						
	Setting resolution	0.01 A							
	Setting accuracy	±1 % of rtg							
Overheat protection	Protection operation		Turns ou	tput off when overheating is d	etected.				
Power limit (sink	Bipolar mode	100 W (TYP) 100 W (TYP) 180 W (TYP) 200 W (1				(TYP)			
power)	Unipolar mode		400 W (TYP)		402 W (TYP)	400 W (TYP)			
<b>Control functions</b>		PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
Internal signal	Control voltage input	By applyin	g approximately 0 V to approx	kimately ±10.0 V, you can gen	erate 0 % to ±100 % of the rate	ed output.			
source's DC signal control	Control voltage ratio input	By using		istor to change the internal ref nerate 0 % to ±108 % of the ra	ference voltage's voltage-divid ated output.	er ratio,			
Output ON/OFF cont	rol input	External contact input to turn output on and off.							
Shutdown input		External contact input to turn the POWER switch off.							
Status output			CV/CC	mode, output on, alarm occu	rrence				

\*1. Voltage is detected at the output terminals.

\*2. OVP is activated even when V-LIMIT (voltage limit) is selected. The OVP activation point is approximately ±120 % of rtg.

\*3. Peak current at 120 Apeak can be output for 10 ms with the CC mode response set to 1 ms. For other CC mode response settings, the peak current is limited (I.LIM) according to the specified response.

Signal I/O			PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
olghai i/o	1	CV mode	-20.00 to +20.00	-20.00 to +20.00	-40.00 to +40.00	-60.00 to +60.00	-80.00 to +80.00		
		CC mode	-20.00 S to +20.00 S	-20.00 S to +20.00 S	-10.00 S to +10.00 S	-6.70 S to +6.70 S	-5.00 S to +5.00 S		
	Amplifier gain	Resolution		0.01 V (CV mode), 0.01 S (CC mode) 0.1 V (CV mode), 0.01 S (CC mode)					
External signal		Accuracy *1	±5 % of rtg						
nput	Maximum allow	able input voltage			±12 Vpeak				
	Input impedance				10 kΩ (TYP)				
	Terminal			BNC safety socket. (C	ommon is connected to the o	utput's COM terminal.)			
	Output voltage				2 V with the rated current	1			
Current monitor output	Output voltage	accuracy			±1 % of rtg (TYP)				
	Output voltage f	requency response			DC to 20 kHz				
	Terminal			BNC safety socket. (C	common is connected to the o	utput's COM terminal.)			
	Input voltage		0.5 Vp-p to 5 Vp-p						
	Input impedance	e	1 kΩ TYP (AC coupling)						
Clock input	Lock frequency	range	10 MHz ± 200 Hz						
	Lock time				2 s or less				
	Terminal		Isola	ated BNC. (Common is isolate	d from the chassis; the maxim	num isolation voltage is 42 Vp	eak.)		
	Output voltage		1 Vp-p TYP (when terminated with 50 $\Omega$ )						
Clock output	Output impedance		50 Ω TYP (AC coupling)						
Slock Output	Output frequency		10 MHz ± 200 Hz						
	Terminal		BNC. (Common is connected to the chassis.)						
	Input level		H level: 2 V to 5 V. L level: 0 V to 0.8 V (TTL compatible)						
	Polarity		H level and L level						
Trigger input	Pulse width		1 µs or more						
ingger input	Delay		1 µs or less						
	Input impedance	e	10 kΩ TYP (DC coupling)						
	Terminal				Common is connected to the c				
	Output level		H level: 2.7 V to 5 V. L level: 0 V to 0.4 V (TTL compatible)						
	Polarity				H level and L level				
Frigger output	Pulse width				10 µs (TYP)				
	Rise time and f	all time			100 ns or less				
	Fan-out				Five units from the PBZ series				
	Terminal			BNC. (0	BNC. (Common is connected to the chassis.)				



Interface		PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5		
Common	Software protocol	IEEE Std 488.2-1992A	IEEE Std 488.2-1992A IEEE Std 488.2-1992					
specifications	Command language		Com	plies with SCPI Specification 1	1999.0			
RS232C	Hardware		Baud rate: 12	232D specifications. D-SUB 9- 00, 2400, 4800, 9600, 19200, s or 8 bits. Stop bit: 1 bit or 2 bi Flow control: X-flow or none.	and 38400 bps			
	Program message terminator	LF during reception, LF during transmission						
GPIB	Hardware		Complies with IEEE Std 488.14987 SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, and E1 24-oin connector (receptacle)					
	Program message terminator	LF or EOI during reception, LF + EOI during transmission						
	Primary address	1 to 30						
	Hardware		Complies with the USB 2.0 s	specifications. Data rate: 12 Mb	ps (full speed). Socket B type			
JSB	Program message terminator		LF or EOM during reception, LF + EOM during transmission					
	Device class		Complies with th	e USBTMC-USB488 device cl	ass specifications			
			IEEE 802.3 100Bas	e-TX/10Base-T Ethernet. IPv4	, RJ-45 connector *2			
AN (factory option)	Hardware	Complies with the LXI 1.4 Core 2011	Complies with the LXI	Class C, Specification 1.2	Complies with the LXI Class	C, Specification 1.4		
	Communication protocol			VXI-11, SCPI-RAW				
	Program message terminator		LF or END du	ring reception, LF + END durin	ng transmission			

\*1. Use a cross cable (null modem cable).

\*2. Category 5; use a straight cable.

Other functions		PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Number of programs		16 programs						
Sequence function	Number of steps		total of 1024 steps						
	Step time		100 µs to 1000 h (resolution of 100 µs) *1						
Preset memory		3 memory entries							
Setup memory		10 memory entries							
Key lock *2			Select one of three security levels						
Remote sensing			Can be turn	ed on and off. Selectable in C	V/CC mode				
Power-on operation			Turn output or	or begin execution of the sec	uence feature				
Soft start and soft st	start and soft stop Can be turned on and off. Soft start and soft stop time: 0.1 ms to 1000 s.								
Parallel operation *3			On up to two same-model PBZs (using the optional parallel operation kit)						

\*1. The DC signal ramp and AC signal amplitude sweep both stop after 1000 s. The AC signal frequency sweep repeats once every 1000 s.

\*2. Low: All keys are locked except for the KEY LOCK (SHIFT + LOCAL), OUTPUT, RECALL, A, B, and C keys. (The RECALL key is used to access setup memory entries and the A, B, and C keys are used to access preset memory entries.) Medium: All keys are locked except for the KEY LOCK (SHIFT + LOCAL) and OUTPUT keys. High: All keys are locked except for the KEY LOCK (SHIFT + LOCAL) and OUTPUT keys.

\*3. Total currents are displayed for the current setting and current measurement in parallel operation.

General specificat	ions	PBZ20-20A	PBZ20-20	PBZ40-10	PBZ60-6.7	PBZ80-5			
	Operating environment		Inc	door use, overvoltage categor	y II				
Environmental conditions	Operating temperature/humidity		0 °C to +40 °C (+32 °	F to +104 °F) / 20 %rh to 85 %	orh (no condensation)				
conditions	Storage temperature/humidity	-25 °C to +70 °C (-13 °F to +158 °F) / 90 %rh or less (no condensation)							
Grounding polarity			Only the c	utput's COM terminal can be	grounded.				
Isolation voltage				500 Vdc max	-				
Withstand voltage	Across the primary circuit and chassis		No abnormalities at 1500 Vac for 1 minute						
winistand voltage	Across the primary circuit and the output terminals								
	Across the primary circuit and chassis		500 V/dc 30	MO or greater (at 70 %rb bum	idity or less)				
Insulation resistance	Across the primary circuit and the output terminals	500 Vdc, 30 M $\Omega$ or greater (at 70 %rh humidity or less)							
	Across the output terminals and chassis	500 Vdc, 1 M $\Omega$ or greater (at 70 %rh humidity or less)							
Earth continuity	Power cord inlet, across the earth pin and chassis		25 Aac, 0.1 $\Omega$ or less						
Cooling method			Forced air coo	ling using variable-speed, hea	at-sensitive fan				
Safety *1			Lo	the requirements of the follow w Voltage Directive 2014/35/E 0-1 (Class I *2, Pollution degr	EŬ				
Electromagnetic comp	patibility (EMC) *1	Complies with the requirements of the following standard. EMC Directive 2014/30/EU EN 61326-1 (Class A *4), EN 55011 (Class A *3, Group 1 *5), EN 61000-3-2, EN 61000-3-3 Applicable condition All of the cables and wires connected to the PBZ are less than 3 m in length.							
External dimensions (	(largest part)			(5.0") (145 (5.7")) H × 550 (21					
Weight	angeet party		. ,	rox. 22 kg (48.50 lb; just the P	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Accessories		Power cord: 1 pc. Power cord: 1 pc. J1 connector (Socket: 1 pc., Protective covers: 2 pairs, Terminals: 30 pc.) Heavy object warning label: 1 pc. CD-ROM: 1 pc. Operation manual (Setup guide 1 pc., Quick reference English 1pc., Japanese 1pc. Safety information 1pc.)							

\*1. Does not apply to specially made or modified PBZs.

\*2. This is a Class I equipment. Be sure to ground this product's protective conductor terminal. The safety of this product is only guaranteed when the product is properly grounded.

This is a Class requipment. This product is intended for use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose.



#### Option

#### Communication interface

#### • LAN

This series is compatible with IEEE488.2 as well as SCPI commands. Downloading the instrument drivers (available on our website) allow for complete control with Excel VBA and LabVIEW, as well as sequence control with our proprietery sequence creation software, Wavy (Wavy for PBZ). LXI compliant LAN interface allows for easy control and monitoring from any web browser.





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

#### Parallel operation kit

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

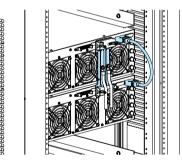
#### Parallel operation kit components

Parallel operation kit PK01-PBZ (option) components

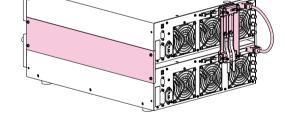
Component	Qty.	Component	Qty.
Brackets	2	Bracket screws (M4-8L)	8
Insulating sheet	1	Spacers	4
OUTPUT terminal connection bar	s 2	Load wire screws (M5-10L)	2
Parallel output terminal cover	1	Parallel operation signal cable	e 1

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

Component	Qty.	Component	Qty.
Insulating sheet	1	Load wire screws (M5-10L)	2
OUTPUT terminal connection ba	rs 2	Parallel operation signal cabl	le 1

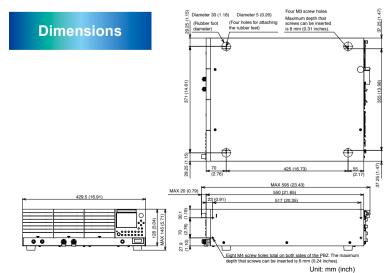


Rack mount bracket: KRB3-TOS or KRB150-TOS is required.



**Rear panel** 





13

#### **Application software**

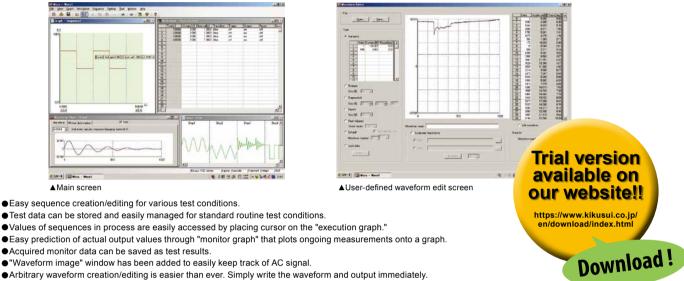
#### Control Kikusui power supplies and electronic loads with precision!

Expanding the limits of electronic engineering "Wavy" sequence creation software



 Sequence creation software "Wavy for PBZ" [Operating environment] Windows Vista / Windows 7 / Windows 8 / Windows 10 \*For details, please see our company's homepage.

"Wavy" is an application software that allows for easy sequence creation and control for Kikusui power supplies and electronic loads. No programming knowledge is required as sequences can be easily drawn or created on a spreadsheet!

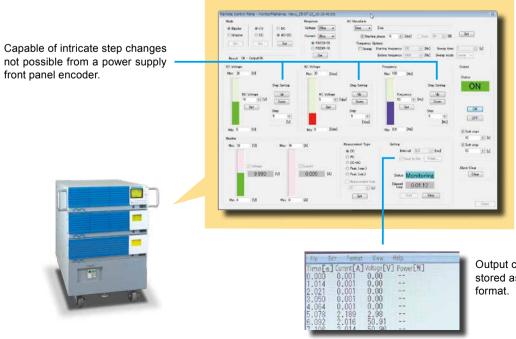


- Easily "select" and "deselect" sequence steps within the waveform. Activate and deactivate "pause", "trigger function", or "AC waveform"
- according to your testing requirements.

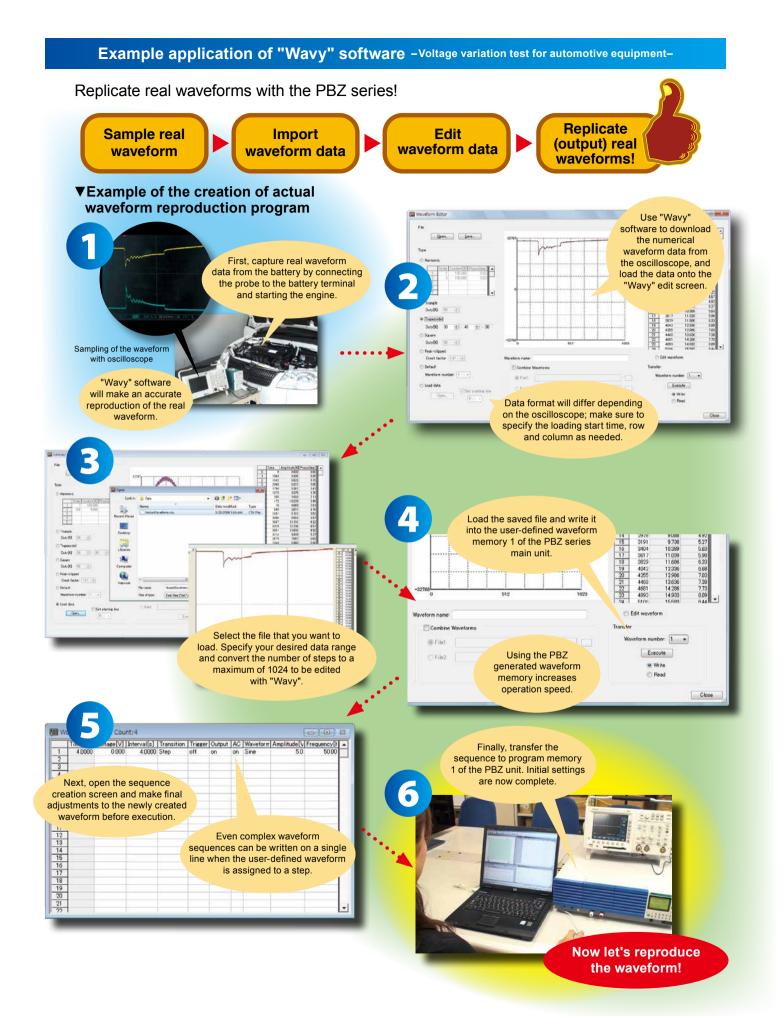
#### Example application of "Wavy" software -Step conversion and monitoring-

#### Easily control your test instruments with a virtual controller

"Wavy" software direct control is perfect for intricate operations too complicated to be performed via the power supply front panel. "Wavy" software can be used as a convenient "remote control" for power supplies and electronic loads, as well as a simple data logger.



Output can be monitored and data stored as a text file in CSV or TSV format.



## **Revolutionizing high power bipolar power supply system design! High power with fast response speeds**



#### **PBZ SR SERIES**

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



•The PBZ SR is a series of high-power bipolar DC power supplies, building upon the revolutionary design of the original PBZ Intelligent Bipolar power supplies series. This series supports current up to  $\pm 100$  A and is assembled in an exclusive rack system (Smart Rack).

# High Power Intelligent Bipolar Power Supply **PBZ SR Series**



#### **PBZ BP SERIES**

 PBZ20-120 BP
 PBZ40-60 BP

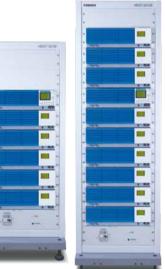
 PBZ20-140 BP
 PBZ40-70 BP

 PBZ20-160 BP
 PBZ40-80 BP

 PBZ20-180 BP
 PBZ40-90 BP

 PBZ20-200 BP
 PBZ40-100 BP

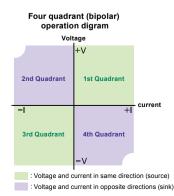
•The PBZ BP is a series of high-power bipolar DC power supplies, building upon the revolutionary design of the original PBZ Intelligent Bipolar power supplies series. This series supports current up to ±200 A and is assembled in an exclusive rack system (Bipolar Pack).



▲PBZ-BP Series

# High Power Intelligent Bipolar Power Supply **PBZ BP Series**

4-quadrant operation allows for both the sourcing and sinking of power, ideal for driving both inductive and capacitive loads. Also, the PBZ SR/BP is equipped with LAN, USB, GPIB and RS232C standard digital 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 <sup>\*2</sup>
- 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 Clearing alarm for master unit clears alarms on all units.



E 1

 $\square$ 

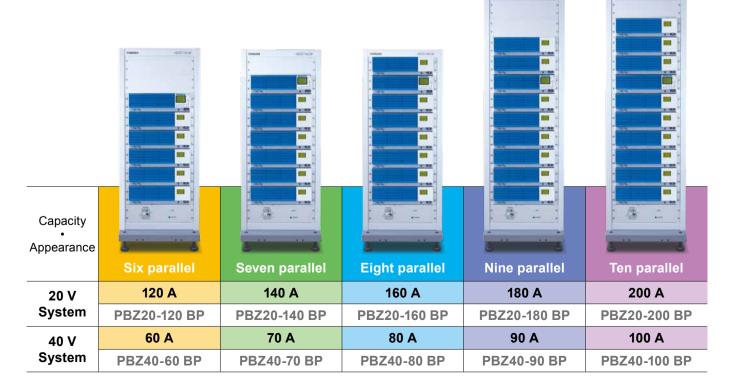
#### PBZ SR Series line-up

Available in a total of 12 models up to 2 kW maximum output with 4 output voltage types:  $\pm 20$  V,  $\pm 40$  V,  $\pm 60$  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 a total of 10 models up to 4kW maximum output with 2 output voltage types:  $\pm 20 V$ ,  $\pm 40 V$ .



#### **PBZ SR Series Specifications**

Inrush current         120 Apeak or less	tage range         180 Vac to 250 Vac           squency range         47 Hz to 63 Hz           rrent         15 Aac or less         20 Aac or less         25 Aac or less         120 Apeak or less         20 Apeak or less         200 Apeak or less         200 Apeak or less         200 Apeak or less         3600 VA or less         3600 VA or less         4500 VA or less         4500 VA or less         4500 VA or less         3600 VA or less         4500 VA or less         4500 VA or less         4500 VA or less         3600 VA or less         4500 VA	Input / Outpu	1		PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR
Prequency range         47 Hz to 63 Hz           Current         15 Aac or less         20 Aac or less         15 Aac or less         120 Apeak or less         120 Apeak or less         120 Apeak or less         20 Aac or less         20           Inrush current         120 Apeak or less         160 Apeak or less         120 Apeak or less         120 Apeak or less         120 Apeak or less         20 Apea	aquency range         47 Hz to 63 Hz           rrent         15 Aa c or less         20 Aa c or less         15 Aa c or less         25 Aa c or less         150 Apeak or less         20 Apeak or less         20 Apeak or less         20 Apeak or less         20 Apeak or less         200 Apeak or less         3000 VA or less         4500 VA or less         3000 VA or less         4500 VA or less         3000 VA or less         4500 VA or less         400 V           wer         1200 W         1600 W         2000 W         1200 W         1600 W         2000 W           wer         1200 W         1600 W         200 V         140 V         2000 W           tage         ± 20 V         ± 100 A         ± 30 A         ± 40 A         ± 50 A           tation voltage         500 Vdc         Only the output's COM terminal can be grounded.         (CV)           uipolar mode         0 V to ± (105 % of rating)         0.00 Vpt to (210 % of rating)         0.00 Vpt to (210 % of rating)           uipolar mode         0.01 V         0.00 Vpt to (210 % of rating) P         0.00 Vpt									
put rating         Current         15 Aac or less         20 Aac or less         15 Aac or less         16 Aac or less         120 Apeak or less <td>internet         15 Aac or less         20 Aac or less         25 Aac or less         15 Aac or less         20 Aac or less         25 Aac or less         25 Aac or less         26 Aac or less         20 Apeak or less         200 Apeak or less         &lt;</td> <td></td> <td>-</td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	internet         15 Aac or less         20 Aac or less         25 Aac or less         15 Aac or less         20 Aac or less         25 Aac or less         25 Aac or less         26 Aac or less         20 Apeak or less         200 Apeak or less         <		-	-						
Inrush current         120 Apeak or less         160 Apeak or less         120 Apeak or less         160 Apeak or less         200 VA or less         3600 VA or less         420           Power factor         0.95 TYP (when the input voltage is 200 V)         1600 W         1600 W         440 V           Uput ting         ± 200 V         ± 200 V         ± 40 V         ± 40 V         ± 40 V           Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A         0           Uput tirminal         Isolation voltage         500 VG         Only the output terminals         Isolation voltage         Sonatad         ± 40 A         0           Output terminal         Isolation voltage         0 V to ± (105 % of rating)         Unipolar mode         0 V to ± (105 % of rating)         0         0         VI + (105 % of rating)         The fasture         ± 5% of rating         E% of rating         E% of rating         0.00 V Vp to (210 % of rating)         The fasture         ± 100 pm / °C of rating)         The fasture         0 / V + 105 % of rating         0 / V + 105 % of rating         0 / V + 100 / 0 / V + 10 / 0 / 0 / V + 100 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0 / 0	turkent         120 Apeak or less         160 Apeak or less         200 Apeak or less         120 Apeak or less         160 Apeak or less         200 Apeak or less         200 Apeak or less         3600 VA or lest         3600 VA or lest         360			range			1			1
Power         2700 VA or less         3600 VA or less         4500 VA or less         2700 VA or less         3600 VA or less         440           Power factor         0.95 TYP (when the input voltage is 200 V)         1200 W         1600 W         2000 W         1200 W         1600 W         200 V         1200 W         1200 W         1600 W         200 V         1200 W         1600 W         200 V         120 W         1600 W         200 V         120 W         1600 W         200 V         120 W         120 W         120 V         120 W         120 V	wer         2700 VA or less         3600 VA or less         4500 VA or less         2700 VA or less         3600 VA or less         4500 VA           wer         1200 W         1600 W         2000 W         1200 W         1600 W         2000 W         1200 W         1600 W         2000 W         1200 W         140 V         The less to the less	put rating					25 Aac or less	15 Aac or less		
Power         1200         1600 W         2000 W         1200 W         1600 W           utput ting         Power         1200 W         1600 W         2000 W         1200 W         1600 W           Utput ting	wer factor         0.95 TYP (when the input voltage is 200 V)         1200 W         1200 W         1600 W         2000 W           tage         ± 20 V         ± 40 V         ± 40 V         2000 W         1200 W         1600 W         2000 W           tage         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 V         ± 50 A         talo A         ± 60 A         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 V         ± 50 A           top tor trainal         Ear panel output terminals         Rear panel output terminals         Ear panel output terminals         Ear panel output terminals           table         Bjolar mode         0 V to ± (105 % of rating)         Fine feature         0.00 V to (0.001 V for 000 V to taing)         Fine feature           solution         0.001 V (0.0001 V for the fine feature)         200 % of rating)         Fine feature         0.00 V pto (210 % of rating) pp         0.00 V pto (210 % of rating) pp         Resolution (1 V V         0.1 V         Accuracy '3         2 0.01 V         0.1 V         Accuracy '3         2 0.01 V         0.01 V         Accuracy '3         2 0.01 V         0.1 V         Accuracy '3         2 0.01 V V         0.1 V         Accuracy '			rent	120 Apeak or less	160 Apeak or less	200 Apeak or less	120 Apeak or less	160 Apeak or less	200 Apeak or les
Power         1200 W         1600 W         2000 W         1200 W         1600 W           Voltage         ± 20 V         ± 40 V         ± 40 V           Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Utput         Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Utput         Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Isolation voltage         Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Isolation voltage         Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Isolation voltage         Current         Earpanel output terminals         Earpanel output terminals         Earpanel output terminals           Isolation voltage         CV         OV to get (105 % of rating)         Eirote         Earpanel output S COM terminals         Earpanel output S COM terminals           Isolation voltage         Estable range 1         0.001 V (0.0001 V for the fine feature)         Accuracy * 2         ± (0.05 % of rating)         Earpanel output S COM terminals         Earpanel output S COM terminals           C voltage         Settable range 1 </td <td>wer         1200 W         1600 W         2000 W         1200 W         1600 W         2000 W           tage         ± 20 V         ± 40 A         ± 50 A         ± 40 V         ± 40 V         ± 50 A         ± 40 A         ± 50 A         ± 60 A         ± 40 A         ± 50 A         ± 40 A         ± 50 A           tput terminal         Iston voltage         500 Vdc         Only the output's COM terminals         Iston voltage         ± 60 A         <td< td=""><td></td><td>Power</td><td></td><td>2700 VA or less</td><td>3600 VA or less</td><td>4500 VA or less</td><td>2700 VA or less</td><td>3600 VA or less</td><td>4500 VA or les</td></td<></td>	wer         1200 W         1600 W         2000 W         1200 W         1600 W         2000 W           tage         ± 20 V         ± 40 A         ± 50 A         ± 40 V         ± 40 V         ± 50 A         ± 40 A         ± 50 A         ± 60 A         ± 40 A         ± 50 A         ± 40 A         ± 50 A           tput terminal         Iston voltage         500 Vdc         Only the output's COM terminals         Iston voltage         ± 60 A         ± 60 A <td< td=""><td></td><td>Power</td><td></td><td>2700 VA or less</td><td>3600 VA or less</td><td>4500 VA or less</td><td>2700 VA or less</td><td>3600 VA or less</td><td>4500 VA or les</td></td<>		Power		2700 VA or less	3600 VA or less	4500 VA or less	2700 VA or less	3600 VA or less	4500 VA or les
Voltage         + 20 V         + 40 V           Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           Output terminal         solation voltage         500 Vdc         Only the output's COM terminal can be grounded.           Settable range '1         Bipolar mode         0 V to ± (105 % of rating)	tage         ± 20 V         ± 40 V           t 40 V           t 20 V         ± 40 V           t 40 V to ± (105 % of rating)           t 40 V to ± (105 % of rating)           t 40 005 % of rating) P           0.00 Vpp to (210 % of rating) pP           0.00 Vpp to (210 % of rating) P			tor		1	0.95 TYP (when the i	nput voltage is 200 V)	1	1
Voltage         1 ± 20 V         1 ± 40 V           Current         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A           utput rminal         Qutput terminal         Rear panel output terminals         Rear panel output terminals           Isolation voltage         500 Vdc         Only the output's COM terminal can be grounded.           Onstant Voltage (CV)         Isolation voltage         0 V to ± (105 % of rating)           Fine feature         0.00 V to (105 % of rating)         Isolation           Resolution         0.00 V to (100 V for the fine feature)         Isolation (TVP)           Accuracy '2         ± 0.00 V po to (210 % of rating) pp         0.00 V po to (210 % of rating) pp           C voltage         Settable range '1         0.00 V po to (210 % of rating) pp         0.00 V po to (210 % of rating) pp           C voltage         Resolution         0.01 V         0.01 V         0.01 V           Resolution         0.01 V         0.01 V         0.1 V         0.1 V           Accuracy '3         ± 0.5 % of rating         Isolation (TVP)         Isolation (TVP)           Accuracy '3         ± 0.5 % of rating         Isolation (TVP)         Isolation (TVP)           Accuracy '3         ± 0.00 K Hz (-3 d B) (TYP)         Isola find (TVP)         Isola (TVP)	rent         ± 60 A         ± 80 A         ± 100 A         ± 30 A         ± 40 A         ± 50 A           tput terminal         Rear panel output terminals         Rear panel output terminals         ± 60 A         ± 50 A	utout	Power		1200 W	1600 W	2000 W	1200 W	1600 W	2000 W
Utput Imminal         Output terminal Isolation voltage         Rear panel output terminals           Output terminal         Isolation voltage         500 Vdc         Only the output's COM terminal can be grounded.           Onstant Voltage (CV)         Impolar mode         0 V to ± (105 % of rating)         0 V to ± (105 % of rating)           C voltage         Bipolar mode         0 V to ± (105 % of rating)         0 V to ± (105 % of rating)           Resolution         0.001 V (0.0001 V for the fine feature)         4.6curacy *2         ± (0.05 % of rating)           Accuracy *2         1 (0.00 V pt o (210 % of rating) pp         0.00 V pt o (210 % of rating) pp           C voltage         Settable range *1         0.00 V pt o (210 % of rating) pp         0.00 V pt o (210 % of rating) pp           C voltage         Resolution         0.01 V         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.1 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.00 V Pp to (210 % of rating) pp         0.00 V pt to (210 % of rating) pp           C voltage         Frequency         Settable range *1         0.00 V Pp to (210 % of rating) pp         0.00 V Pp to (210 % of rating) pp           C voltage         Frequency         Settable range         0.01 V         0.01 V         0.01 V           C voltage </td <td>tput terminal         Rear panel output terminals           lation voltage         500 Vdc         Only the output's COM terminal can be grounded.           e(CV)         Bipolar mode         0 V to ± (105 % of rating)           table         Unipolar mode         0 V to ± (105 % of rating)           ige *1         Fine feature         2 % of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of rating)           mperature coefficient         ± 100 ppm / °C of rating (TYP)           tage         Settable range *1         0.001 V (0.001 V for the fine feature)           genery response *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Accuracy *3         ± 0.5 % of rating         0.1 V           spense *5 (TYP)         0.01 Hz to 100.00 KHz         0.1 V           spense *6 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs         5 % or less (TYP)           spense *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)         6 mV           tage *1         0.00 Kp to (105 % of rating)         6 mV</td> <td></td> <td>Voltage</td> <td></td> <td></td> <td>± 20 V</td> <td>1</td> <td></td> <td>± 40 V</td> <td>1</td>	tput terminal         Rear panel output terminals           lation voltage         500 Vdc         Only the output's COM terminal can be grounded.           e(CV)         Bipolar mode         0 V to ± (105 % of rating)           table         Unipolar mode         0 V to ± (105 % of rating)           ige *1         Fine feature         2 % of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of rating)           mperature coefficient         ± 100 ppm / °C of rating (TYP)           tage         Settable range *1         0.001 V (0.001 V for the fine feature)           genery response *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Accuracy *3         ± 0.5 % of rating         0.1 V           spense *5 (TYP)         0.01 Hz to 100.00 KHz         0.1 V           spense *6 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs         5 % or less (TYP)           spense *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)         6 mV           tage *1         0.00 Kp to (105 % of rating)         6 mV		Voltage			± 20 V	1		± 40 V	1
Voltage         Solution voltage         O V to ± (105 % of rating)         Solution voltage         Solution voltage         Solution voltage         O V to ± (105 % of rating)         Solution voltage         Solution voltage         O V to ± (105 % of rating)         Solution voltage	Iation voltage       500 Vdc       Only the output's COM terminal can be grounded.         e(CV)       Bipolar mode       0 V to ± (105 % of rating)         Unipolar mode       0 V to ± (105 % of rating)         Fine feature       ±5% of rating         Solution       0.001 V (0.0001 V for the fine feature)         curacy '2       ±100 ppm /*C of rating (TYP)         mperature coefficient       ±100 ppm /*C of rating         Resolution       0.01 V (0.0001 V for the fine feature)         curacy '3       0.01 V (0.0001 V for the fine feature)         Accuracy '3       0.01 V         Accuracy '3       ±0.5 % of rating         outputy response '4       DC to 100 kHz (-3 dB) (TYP)         sponse '5 (TYP)       3.5 µs, 10 µs, 35 µs, 100 µs         rshow (Fine feature)       5 % or less (TYP)         openet '9       ± (0.005 % of setting + 1 mV)         urce effect '9       ± (0.005 % of setting + 1 mV)         urce effect '10       ± (0.005 % of rating)         ttable       0 A to ± (105 % of rating)	_	Current		± 60 A	± 80 A	± 100 A	± 30 A	± 40 A	± 50 A
Instant Voltage     Instant Voltage     0 V to ± (105 % of rating)       Onstant Voltage (CV)     0 V to ± (105 % of rating)       C voltage     Implicit mode     0 V to ± (105 % of rating)       Resolution     0.001 V (0.0001 V for the fine feature)       Accuracy *2     ± (0.05 % of setting + 0.05 % of rating)       Temperature coefficient     ± 100 ppm / *C of rating)       Resolution     0.01 V     0.01 V       Accuracy *2     ± (0.05 % of rating)       Temperature coefficient     ± 0.00 Vpp to (210 % of rating) pp       Voltage     Settable range *1     0.00 Vpp to (210 % of rating) pp       Resolution     0.01 V     0.1 V       Accuracy *3     ± 0.5 % of rating       Frequency     Settable range *1     0.00 Vpp to (210 % of rating) pp       Voltage     Frequency     0.1 V       Resolution     0.01 V     0.1 V       Accuracy *3     ± 0.5 % of rating       Frequency     Settable range     0.01 V       Overshort *6     5 % or less (TYP)       Overshort *6     5 % or less (TYP)       Overshort *6     3 mV     6 mV       Load effect *9     ± (0.005 % of setting + 1 mV)       Source effect *10     ± (0.005 % of setting + 1 mV)       Source effect *10     ± (0.005 % of setting + 1 mV)       Injoindar mode <td>e (CV)         Bipolar mode         0 V to ± (105 % of rating)           table         0 V to ± (105 % of rating)         0 V to ± (105 % of rating)           Fine feature         ± 5% of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± 100 ppm /*C of rating (TYP)           Settable range *1         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V           Accuracy *3         ± 0.5 % of rating           requency response *4         DC to 100 kHz           squency response *4         DC to 100 kHz (-3 dB) (TYP)           specificient *0         5 % or less (TYP)           set af effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           trace         ± (0.005 % of setting + 1 mV)           trace         ± (0.005 % of setting + 1 mV)</td> <td></td> <td>Output ter</td> <td>minal</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	e (CV)         Bipolar mode         0 V to ± (105 % of rating)           table         0 V to ± (105 % of rating)         0 V to ± (105 % of rating)           Fine feature         ± 5% of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± 100 ppm /*C of rating (TYP)           Settable range *1         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V           Accuracy *3         ± 0.5 % of rating           requency response *4         DC to 100 kHz           squency response *4         DC to 100 kHz (-3 dB) (TYP)           specificient *0         5 % or less (TYP)           set af effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           trace         ± (0.005 % of setting + 1 mV)           trace         ± (0.005 % of setting + 1 mV)		Output ter	minal						
Settable range *i         Bipolar mode         0 V to ± (105 % of rating)           C voltage         Accuracy *i         0 V to ± (105 % of rating)           Resolution         0.001 V (0.0001 V for the fine feature)           Accuracy *i         ± (0.05 % of setting ± 0.05 % of rating)           Temperature coefficient         ± (0.05 % of setting ± 0.05 % of rating)           Temperature coefficient         ± (0.05 % of setting ± 0.05 % of rating)           Resolution         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Voltage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.1 V           Accuracy *3         ± 0.5 % of rating         0.00 Vpp to (210 % of rating) pp           Frequency response *4         DC to 100 kHz to 100.00 kHz         0.1 V           Resolution         0.01 V         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5 % or less (TYP)         0.00 kHz           Ripple noise         (p-p) *7         30 mV (TYP)           raracter-         0.00 deffect *9         ± (0.005 % of setting +1 mV)           Source effect *10         ± (0.005 % of setting +1 mV) </td <td>Bipolar mode         0 V to ± (105 % of rating)           Unipolar mode         0 V to + (105 % of rating)           Fine feature         ± 5% of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± 100 ppm / °C of rating (TYP)           Resolution         0.01 V           Macuracy *3         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V           Stable range         0.01 V           Accuracy *3         ± 0.05 % of rating           squency         Settable range           Very response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 100 µs           sponse *5 (TYP)         3.5 µs, 100 µs           sponse *6 (TYP)         3.6 µs or less (TYP)           sponse *6 (TYP)         \$ 0 Ato ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)</td> <td>rminal</td> <td>Isolation v</td> <td>oltage</td> <td></td> <td>500 V</td> <td>dc Only the output's C</td> <td>OM terminal can be gro</td> <td>unded.</td> <td></td>	Bipolar mode         0 V to ± (105 % of rating)           Unipolar mode         0 V to + (105 % of rating)           Fine feature         ± 5% of rating           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± 100 ppm / °C of rating (TYP)           Resolution         0.01 V           Macuracy *3         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V           Stable range         0.01 V           Accuracy *3         ± 0.05 % of rating           squency         Settable range           Very response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 100 µs           sponse *5 (TYP)         3.5 µs, 100 µs           sponse *6 (TYP)         3.6 µs or less (TYP)           sponse *6 (TYP)         \$ 0 Ato ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)	rminal	Isolation v	oltage		500 V	dc Only the output's C	OM terminal can be gro	unded.	
Settable range *i         Unipolar mode         0 V to + (105 % of rating)           C voltage         Fine feature         ± 5% of rating           Resolution         0.001 V (0.0001 V for the fine feature)           Accuracy *2         ± (0.05 % of setting + 0.05 % of rating)           Temperature coefficient         ± 100 ppm / °C of rating (TYP)           C voltage         Settable range *i         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           C voltage         Resolution         0.01 V         0.1 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.1 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.00 kHz         0.1 V           Accuracy *3         ± 0.5 % of rating         0.00 kHz         0.1 V           Response *5 (TYP)         Settable range         0.01 Hz to 100.00 kHz         0.1 V           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 10 µs         0.0 V         0.0 V           Overshoot *6         5 % or less (TYP)         6 mV         6 mV           Load effect *9         ± (0.005 % of setting + 1 mV)         6 mV         10.005 % of setting + 1 mV)         0.005 % of setting + 1 mV)         0.005 % of setting + 1 mV)         0.00 Source efficient + 10 (Dio S w of rating)         0.0 A to ± (105 % of rating) <td>Itable ige *i         Unipolar mode         O V to + (105 % of rating)           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± (0.05 % of setting + 0.05 % of rating)           Market         Settable range *1         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency         Settable range         0.01 V /           solution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           sponse *5 (TYP)         3.0 mV (TYP)           (ms) *6         3 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           ttccc         ± (0.005 % of rating)           Unipolar mode         0 A to ± (105 % of rating)</td> <td>onstant Vol</td> <td>ltage (CV)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td>	Itable ige *i         Unipolar mode         O V to + (105 % of rating)           solution         0.001 V (0.0001 V for the fine feature)           curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± (0.05 % of setting + 0.05 % of rating)           Market         Settable range *1         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.00 Vpp to (210 % of rating) pp           Accuracy *3         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency         Settable range         0.01 V /           solution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           sponse *5 (TYP)         3.0 mV (TYP)           (ms) *6         3 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           ttccc         ± (0.005 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	onstant Vol	ltage (CV)						-	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Outpolar mode         Outpolar mode         Outpolar mode           Fine feature         ± 00 to + (105 % of rating)           Fine feature         ± 0.001 V (0.0001 V for the fine feature)           curacy '2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ± 100 ppm / °C of rating (TYP)           Settable range '1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Accuracy '3         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Accuracy '3         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Accuracy '3         0.00 Vpp to (210 % of rating) pp         0.01 V           Accuracy '3         ± 0.5 % of rating           squency         Settable range         0.01 Hz to 100.00 KHz           squency         Settable range         0.01 Hz to 100.00 KHz           squency         Settable range         0.01 Hz to 100.00 KHz           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           settable range         1 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           ttccc         ± 0 A to ± (105 % of rating)		Sottoblo	Bipolar mode			0 V to ± (105	5 % of rating)		
C voltage         Resolution         0.001 V (0.0001 V for the fine feature)           Accuracy *2         ± (0.05 % of setting + 0.05 % of rating)           Temperature coefficient         ±100 ppm / °C of rating (TYP)           Voltage         Settable range *1         0.00 Vpp to (210 % of rating) pp           Voltage         Resolution         0.01 V         0.00 Vpp to (210 % of rating) pp           Voltage         Resolution         0.01 V         0.00 Vpp to (210 % of rating) pp           C voltage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           C voltage         Frequency *3         ± 0.5 % of rating         0.1 V           Frequency *3         ± 0.5 % of rating         0.1 V           Accuracy *3         ± 0.5 % of rating         0.1 V           Response *4         DC to 100 kHz (-3 dB) (TYP)         Response *4           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs         0 vershoot *5           Overshoot *6         Frequency response *4         S work (TYP)         6 mV           load effect *9         3 mV         6 mV         6 mV           load effect *9         3 mV         6 mV         10.005 % of setting + 1 mV)           source effect *10         ± (0.005 % of setting + 1 mV) <t< td=""><td>solution         0.001 V (0.0001 V for the fine feature)           curacy '2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ±100 ppm / °C of rating (TYP)           settable range '1         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V           Accuracy '3         ± 0.5 % of rating           rquency         Settable range           squency         Settable range           cquency         Settable range           settable range         0.01 Hz to 100.00 Hz           settable range         Settable range           upice         Settable range</td><td></td><td></td><td>Unipolar mode</td><td></td><td></td><td>0 V to + (105</td><td>5 % of rating)</td><td></td><td></td></t<>	solution         0.001 V (0.0001 V for the fine feature)           curacy '2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ±100 ppm / °C of rating (TYP)           settable range '1         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V           Accuracy '3         ± 0.5 % of rating           rquency         Settable range           squency         Settable range           cquency         Settable range           settable range         0.01 Hz to 100.00 Hz           settable range         Settable range           upice         Settable range			Unipolar mode			0 V to + (105	5 % of rating)		
Resolution       0.001 V (0.0001 V for the fine feature)         Accuracy *2       ± (0.05 % of setting + 0.05 % of rating)         Temperature coefficient       ±100 ppm /*C of rating (TYP)         Voltage       Settable range *1       0.00 Vpp to (210 % of rating) pp       0.00 Vpp to (210 % of rating) pp         Voltage       Resolution       0.01 V       0.1 V         Accuracy *3       ± 0.5 % of rating         Frequency       Settable range       0.01 V         Accuracy *3       ± 0.5 % of rating         Frequency       Settable range       0.01 V         Voltage       Frequency *3       ± 0.5 % of rating         Voltage       Settable range       0.01 V         Voltage       Frequency *3       ± 0.5 % of rating         Voltage       Frequency *3       DC to 100 kHz (-3 dB) (TYP)         Resolution *6       S for less (TYP)       3.5 µs, 10 µs, 35 µs, 100 µs         Overshoot *6       Ripple       (p-p) *7         noise       (p-p) *7       3 mV         Load effect *9       3 mV       6 mV         Source effect *10       ± (0.005 % of setting + 1 mV)         Source effect *10       ± (0.005 % of rating)         Load effect *1       Settable       Bipolar mode	curacy *2         ± (0.05 % of setting + 0.05 % of rating)           mperature coefficient         ±100 ppm / °C of rating (TYP)           Itage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency         Settable range         0.01 Hz to 100.00 kHz           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           set add effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           trCO         t(0.005 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	Cvoltage		Fine feature			± 5% o	f rating		
Temperature coefficient         ±100 ppm / °C of rating (TYP)           C voltage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           C voltage         Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 V           Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         Settable range         0.01 Hz to 100.00 kHz           Settable range         0.01 kHz (-3 dB) (TYP)           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5 % or less (TYP)           Notes of tree         3 mV         6 mV           Load effect *9         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of rating)           Onstant current (CC)         0 A to ± (105 % of rating)           Settable         Bipolar mode         0 A to ± (105 % of rating)	Imperature coefficient         ±100 ppm / °C of rating (TYP)           Itage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           equency         Settable range         0.01 V           squency         Settable range         0.01 V           squency         Settable range         0.01 Hz to 100.00 KHz           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           set adeflect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           tcCO         Unipolar mode         0 A to ± (105 % of rating)	o voltage	Resolution	1			0.001 V (0.0001 V	for the fine feature)		
Voltage         Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           C voltage         Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 V           Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 V           Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 V ± 0.00 kHz           Settable range         0.01 V ± 0.00 kHz         0.01 V           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5 % or less (TYP)           Notes of the response *4         0.005 % of setting + 1 mV)           Load effect *9         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of rating)           Voltage         Ø A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	Settable range *1         0.00 Vpp to (210 % of rating) pp         0.00 Vpp to (210 % of rating) pp           Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           rquency         Settable range         0.01 Hz to 100.00 KHz           rquency         settable range         0.01 Hz to 100.00 KHz           rquency         response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           sponse *5 (TYP)         3.0 mV (TYP)           see         (n-p) *7           (ms) *8         3 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           t(CC)         Unipolar mode         0 A to ± (105 % of rating)		Accuracy	*2			± (0.05 % of setting	+ 0.05 % of rating)		
C voltage         Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating         0.01 Hz to 100.00 kHz           Frequency         Settable range         0.01 Hz to 100.00 kHz           Prequency         Settable range         0.01 Hz to 100.00 kHz           Overshoot *6         DC to 100 kHz (-3 dB) (TYP)           Accuracy *3         Settable range           Voltage         (P-P) *7           Inaracter-         (P-P) *7           Inics         (P-P) *7           Icoad effect *9         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of rating)           Inicaturer         Inicaturer           Settable         Bipolar mode           Inicaturer         0 A to ± (105 % of rating)	Resolution         0.01 V         0.1 V           Accuracy *3         ± 0.5 % of rating           squency         Settable range         0.01 Hz to 100.00 kHz           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           spine         5 % or less (TYP)           set         30 mV (TYP)           set         6 mV           deffect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           t(CC)         Unipolar mode         0 A to ± (105 % of rating)		Temperatu	ire coefficient			±100 ppm / °C	of rating (TYP)		-
C voltage       Accuracy *3       ± 0.5 % of rating         Accuracy *3       ± 0.5 % of rating         Frequency       Settable range       0.01 Hz to 100.00 kHz         Frequency       Settable range       DC to 100 kHz (-3 dB) (TYP)         Response *6 (TYP)       3.5 µs, 10 µs, 35 µs, 100 µs         Overshoot *6       5 % or less (TYP)         Inaracter-       0 (P-p) *7         noise       (P-p) *7         Icoad effect *9       ± (0.005 % of setting + 1 mV)         Source effect *10       ± (0.005 % of rating)         Instant current (CC)       0 A to ± (105 % of rating)	Accuracy *3         ± 0.5 % of rating           equency         Settable range         0.01 Hz to 100.00 kHz           equency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           ople         (p-p) *7           (ms) *8         3 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of rating)           t (CC)         0 A to ± (105 % of rating)			Settable range *1	0.0	0 Vpp to (210 % of rating	g) pp	0.0	0 Vpp to (210 % of rating	1) bb
Accuracy *3         ± 0.5 % of rating           Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         Settable range         0.01 Hz to 100.00 kHz           Prequency         Response *4         DC to 100 kHz (-3 dB) (TYP)           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5 % or less (TYP)           Noise         (p-p) *7           Inoise         (p-p) *7           Icoad effect *9         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of setting + 1 mV)           Oonstant current (CC)         0 A to ± (105 % of rating)           Biplolar mode         0 A to ± (105 % of rating)	squency         Settable range         0.01 Hz to 100.00 kHz           squency response *4         DC to 100 kHz (-3 dB) (TYP)           sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           ershoot *6         5 % or less (TYP)           ople         [P-P) *7           (P-P) *7         30 mV (TYP)           se         3 mV           (ms) *8         3 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           t (CC)         Unipolar mode           Bipolar mode         0 A to ± (105 % of rating)					0.01 V			0.1 V	
Frequency response *4         DC to 100 kHz (-3 dB) (TYP)           Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5% or less (TYP)           naracter- tics         (p-p) *7           Noise         (p-p) *7           Load effect *9         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of setting + 1 mV)           onstant current (CC)         Settable           Bipolar mode         0 A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	Biple         Biple         Close           Biple armode         0 A to ± (105 % of rating)	o voltage		Accuracy *3						
Response *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           Overshoot *6         5 % or less (TYP)           naracter- tics         (p-p) *7           Noise         (p-p) *7           Source effect *9         3 mV           Source effect *10         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of rating)           Settable         Bipolar mode           Vertable         0 A to ± (105 % of rating)	Sponse *5 (TYP)         3.5 µs, 10 µs, 35 µs, 100 µs           sershoot *6         5 % or less (TYP)           ople         (p-p) *7           implexed         3 mV           (rms) *8         3 mV           6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)           urce effect *10         ± (0.005 % of setting + 1 mV)           t(CC)         t           Bipolar mode         0 A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)		Frequency	Settable range						
Overshoot *6     5 % or less (TYP)       Bipple naracter- tics     (p-p) *7       Noise     (p-p) *7       Load effect *9     3 mV       Source effect *10     ± (0.005 % of setting + 1 mV)       Source effect *10     ± (0.005 % of setting + 1 mV)       Source effect *10     ± (0.005 % of setting + 1 mV)	ershoot *6         5 % or less (TYP)           ople         (P-p) *7         30 mV (TYP)           se         (ms) *8         3 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)         urce effect *10         ± (0.005 % of setting + 1 mV)           trace effect *10         ± (0.005 % of setting + 1 mV)         texting the setting the sett		Frequency	response *4			DC to 100 kHz	( -3 dB) (TYP)		
Bitsge haracter- tics         Construct of the point of the poin	bple se         (p-p) *7         30 mV (TYP)           se         (ms) *8         3 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)         0 mV           urce effect *10         ± (0.005 % of setting + 1 mV)         0 mV           t (CC)         t (0.005 % of rating)         0 A to ± (105 % of rating)           t (Dipolar mode         0 A to ± (105 % of rating)         0 A to ± (105 % of rating)		Response	*5 (TYP)			3.5 µs, 10 µs,	35 µs, 100 µs		
Ripple         (p-p) //         (p-p) //         30 mV (1 YP)           noise         (ms) *8         3 mV         6 mV           Load effect *9         ± (0.005 % of setting + 1 mV)         5 ource effect *10         ± (0.005 % of setting + 1 mV)           source effect *10         ± (0.005 % of setting + 1 mV)         5 ource effect *10         ± (0.005 % of setting + 1 mV)           onstant current (CC)         5 ource effect *10         0 A to ± (105 % of rating)         0 A to ± (105 % of rating)	se         (rms) *8         3 mV         6 mV           ad effect *9         ± (0.005 % of setting + 1 mV)         urce effect *10         ± (0.005 % of setting + 1 mV)           t(CC)         # <td></td> <td>Overshoot</td> <td>*6</td> <td></td> <td></td> <td>5 % or le</td> <td>ss (TYP)</td> <td></td> <td></td>		Overshoot	*6			5 % or le	ss (TYP)		
noise         (rms) *8         3 mV         6 mV           Load effect *9         ± (0.005 % of setting + 1 mV)         ± (0.005 % of setting + 1 mV)           Source effect *10         ± (0.005 % of setting + 1 mV)         ± (0.005 % of setting + 1 mV)           onstant current (CC)           Ø A to ± (105 % of rating)           Settable         Unipolar mode         Ø A to ± (105 % of rating)	(mill of a field	ltage	Ripple	(p-p) *7			30 mV	(TYP)		
Source effect *10         ± (0.005 % of setting + 1 mV)           onstant current (CC)         Bipolar mode         0 A to ± (105 % of rating)           Settable         Unipolar mode         0 A to ± (105 % of rating)	Bipolar mode         0 A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)		noise	(rms) *8		3 mV			6 mV	
onstant current (CC)           Settable         Bipolar mode         0 A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	t (CC) Bipolar mode 0 A to ± (105 % of rating) Unipolar mode 0 A to ± (105 % of rating)		Load effect	:t *9			± (0.005 % of s	setting + 1 mV)		
Bipolar mode         0 A to ± (105 % of rating)           Unipolar mode         0 A to ± (105 % of rating)	ttable     Bipolar mode     0 A to ± (105 % of rating)       Unipolar mode     0 A to ± (105 % of rating)		Source eff	ect *10			± (0.005 % of s	setting + 1 mV)		
Settable Unipolar mode 0.4 to + (105 % of rating)	Unipolar mode 0 A to ± (105 % of rating)	onstant cur	rrent (CC)							
(U A to + (105%) ot rating)	Unipolar mode U A to ± (105 % of rating)		0-#-51-	Bipolar mode			0 A to ± (105	5 % of rating)		
			Settable range *1	Unipolar mode			0 A to ± (105	5 % of rating)		
Fine feature ± 5 % of rating				Fine feature			± 5 % c	of rating		
C current Resolution *11 0.003 A 0.004 A 0.005 A 0.003 A 0.004 A	solution *11 0.003 A 0.004 A 0.005 A 0.003 A 0.004 A 0.005 A	C current	Resolution	*11	0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A
Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A				Fine feature *11	0.0003 A	0.0004 A	0.0005 A	0.0003 A	0.0004 A	0.0005 A
Accuracy *2 ± 0.3 % of rating			Accuracy	2			± 0.3 %	of rating		
Temperature coefficient ± (100 ppm / °C of rating) (TYP)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A		Temperatu	ure coefficient			± (100 ppm / °C	of rating) (TYP)		
Settable range *1 0 App to (210 % of rating) p-p	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating			Settable range *1			0 App to (210 °	% of rating) p-p		
Courrent Resolution *12 0.03 A 0.04 A 0.05 A 0.03 A 0.04 A	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± (100 ppm / °C of rating) (TYP)         ±	Courrent	Current	Resolution *12	0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating)         ± 0.3 % of rating)         TYP)           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         Understand	Content		Accuracy *13			± 0.5 %	of rating		
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±		Frequency	Settable range			0.01 Hz to	100.00 kHz		
Frequency     Settable range     0.01 Hz to 100.00 kHz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ±         ±         (100 ppm / °C of rating) p-p         T           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ±         ±         ±         0.5 % of rating         ±         5		Frequency	response *14	C	OC to 10 kHz (-3 dB) (TY	P)	ſ	DC to 5 kHz (-3 dB) (TYF	<b>&gt;</b> )
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating)         ± 0.0005 A         0.0004 A         0.0005 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)         U         <	onstant	Response	*15 (TYP)	3	5 µs, 100 µs, 350 µs, 1 ı	ms	7	0 µs, 100 µs, 350 µs, 1 r	ns
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 us, 100 us, 350 us, 1 ms         70 us, 100 us, 350 us, 1 ms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ± 0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)             Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ± 0.03 A         0.04 A         0.05 A         0.01 Hz to 100.00 KHz             equency         Settable range         0.01 Hz to 100 kHz (-3 dB) (TYP)         DC to 5 KHz (-3 dB) (TYP)		Overshoot	*16			5 % or le	ss (TYP)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 μs, 100 μs, 350 μs, 1 ms         70 μs, 100 μs, 350 μs, 1 ms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.0004 A         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating         1000 ppm / °C of rating) (TYP)         U		Ripple noi	se (rms) *17			51	mA		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant inrent         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         .	tics	Load effect	:t *18			± (0.01 % of s	etting + 1 mA)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant inrent         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)         ±         ±         0.0004 A         0.0005 A           settable range *1         O.003 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           accuracy *13         ± 0.5 % of rating         ± 0.5 % of rating         ± 0.5 % of rating         DC to 5 kHz (-3 dB) (TYP)         Settable range         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         Sponse *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         TO µs, 100 µs, 350 µs, 1 ms         S% or less (TYP)           sponse *16         5 % or less (TYP)         5 mA         Standard         Standard         Standard		Source eff	ect *19			± (0.01 % of s	etting + 1 mA)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)         ±         ±         0.0004 A         0.0005 A           Memory *2         Settable range *1         O App to (210 % of rating) (TYP)         O App to (210 % of rating) p-p           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ±         0.01 A         0.05 A         0.03 A         0.04 A         0.05 A           requency         Settable range         0.01 At         0.05 A         0.03 A         0.04 A         0.05 A           requency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         sponse *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms         5 % or less (TYP)           sponse *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         5 m A         ± (0.01 % of setting + 1 mA)         ± (0.01 % of setting + 1 mA)	C common	characteris	stics						
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         #						0.0	1 Hz		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Riple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)									
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Riple noise (rms) *17         5 mA           Load effect *18         ± (0.01% of setting + 1 mA)           Source effect *19         ± (0.01% of setting + 1 mA)           Common characteristics         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         impose to pp to (210 % of rating) p-p         merature value val									
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant irrent naracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Norshot         Response *16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Structure         5 % or less (TYP)           Nore effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz           equency resolution         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)               0.004 A         0.0005 A         0.001 A         0.05 A         0.001 A         0.05 A         0.001 A         0.05 A         0.004 A         0.05 A         0.005 A         0.001 A         0.05 A         0.001 A         0.05 A         0.004 A         0.05 A         0.001 A         0.05 A         0.001 A         0.05 A		Type			Sine wave sour			hitrary waveforms	
Frequency     Settable range     0.01 Hz to 100.00 kHz       onstant urrent haracter- tics     Frequency response *14     DC to 10 kHz (-3 dB) (TYP)     DC to 5 kHz (-3 dB) (TYP)       Vershoot *16     35 µs, 100 µs, 350 µs, 1 ms     70 µs, 100 µs, 350 µs, 1 ms       Overshoot *16     5 % or less (TYP)       Ripple noise (rms) *17     5 mA       Load effect *18     ± (0.01 % of setting + 1 mA)       Source effect *19     ± (0.01 % of setting + 1 mA)       cequency resolution     0.01 Hz       requency Accuracy     ± 200 ppm       weep     Linear and logarithmic	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)              0.005 A         0.004 A         0.005 A         0.01 P           Accuracy *13         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A         0.01 Hz to 100.00 KHz          Concary *13         0.01 Hz to 100.00 KHz          Concary *13         0.01 Hz         Stable range         0.01 Hz         Stable range *10 (TYP)         DC to 5 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         Stap sto µs, 1 ms         To µs, 100 µs, 350 µs, 1 ms         To µs, 100 µs, 350 µs, 1 ms         Sto µs (TYP)         St	aveform		•		onie wave, squa				
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant urrent haracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Qvershoot *16         S5 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         SmA           icone effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           cequency resolution         0.01 Hz           requency Accuracy         ± 200 ppm           weep         Linear and logarithmic           Type         Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± 0.3 % of rating) (TYP)         it is it	aveiUIIII			0.1.% +0.00.0.%	(f < 100 Hz) 1 % to 00			< 10 kUz) and fixed to F	
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant urrent traatacter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Overshoot *16         Sp sp, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Sm A         5 % or less (TYP)         35 µs, 100 µs, 350 µs, 1 ms         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)         5 wore setting + 1 mA)         5 wore setting + 1 mA)           Source effect *19         0.01 Hz         ± (0.01 % of setting + 1 mA)         5 wore setting + 1 mA)           requency resolution         0.01 Hz         ± 200 ppm         ± 200 ppm           weep         Linear and logarithmic         Linear and logarithmic           Aaveform         Type         Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP) <td< td=""><td></td><td></td><td>ive duty cycle</td><td>0.1 % to 99.9 %</td><td>₀ (i &lt; 100 ⊓Z), 1 % to 99</td><td><math>70</math> (IUU <math>\Pi Z \ge I &lt; I KHZ</math>),</td><td>10 % 10 90 % (1 KHZ ≤ 1</td><td><ul> <li>IU KHZ), and fixed to 5</li> </ul></td><td>U 70 (IU KHZ ≦ T)</td></td<>			ive duty cycle	0.1 % to 99.9 %	₀ (i < 100 ⊓Z), 1 % to 99	$70$ (IUU $\Pi Z \ge I < I KHZ$ ),	10 % 10 90 % (1 KHZ ≤ 1	<ul> <li>IU KHZ), and fixed to 5</li> </ul>	U 70 (IU KHZ ≦ T)
Current         Settable range *1         0 App to (210 % of rating) p-p           AC current         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A           curacy *2         ± 0.3 % of rating	Constant current character- istics AC common Frequency re Frequency A	Current Frequency Frequency Response Overshool Ripple noi Load effec Source eff characteris esolution	Settable range *1 Resolution *12 Accuracy *13 Settable range r response *14 *15 (TYP) : *16 se (rms) *17 :t *18 iect *19	C	DC to 10 kHz (-3 dB) (TY	0 App to (210 <sup>c</sup> 0.05 A ± 0.5 % 0.01 Hz to P) ms 5 % or le 5 1 ± (0.01 % of s ± (0.01 % of s 0.0 ± 200	% of rating) p-p 0.03 A of rating 100.00 kHz (TPP) mA etting + 1 mA) etting + 1 mA) I Hz 0 ppm	DC to 5 kHz (-3 dB) (TYP	
	solution 11   0.003 A   0.004 A   0.005 A   0.003 A   0.004 A   0.005 A	; current	Resolutior							
Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A				Fine feature *11	0.0003 A	0.0004 A	0.0005 A	0.0003 A	0.0004 A	0.0005 A
				1	0.0003 A	0.0004 A			0.0004 A	0.0005 A
			Accuracy	1				of rating		
Accuracy *2 ± 0.3 % of rating			Accuracy	2			± 0.3 %	of rating		
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A						± 0.3 %	of rating		
Temperature coefficient ± (100 ppm / °C of rating) (TYP)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A		Temperatu	ire coefficient			± (100 ppm / °C	of rating) (TYP)		-
Settable range 1 0 App to (210 % of rating) p-p	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating			Settable range *1			0 App to (210 °	% of rating) p-p		
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.10 ppm / °C of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)         ±		Current		0.03 A	0.04 A		<b>2</b> , 1 1	0.04 A	0.05 A
C current	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.0005 A         0.0005	C current				1	1		1	
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ±         ±         0.3 % of rating         ±         0.0004 A         0.0005 A         0.0000 A         0.0005 A         0.0005		_					-		
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ±         ±         0.3 % of rating         ±         0.0004 A         0.0005 A         0.0000 A         0.0005 A         0.0005		Frequency	Settable range			0.01 Hz to	100.00 kHz		
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ±         ±         0.3 % of rating         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ±         ±         0.0007 % of rating) (TYP)         ±         100 ppm / °C of rating) (TYP)           Settable range *1         0.004 A         0.005 A         0.03 A         0.04 A         0.05 A           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ±         5% of rating         ±         0.5% of rating         ±         5%									
	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating)         ± 0.3 % of rating)         TYP           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ±         5		Frequency	response *14	C	OC to 10 kHz (-3 dB) (TY	P)	C.	DC to 5 kHz (-3 dB) (TYP	<sup>&gt;</sup> )
Frequency Settable range 0.01 Hz to 100.00 kHz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2          ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ±         ±         100 ppm / °C of rating) (TYP)         TYP									
Frequency Settable range 0.01 Hz to 100.00 kHz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2          ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ±		Response	*15 (TYP)	3	5 us. 100 us. 350 us. 1 i	ms	7	0 µs. 100 µs. 350 µs. 1 r	ns
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2          ± 0.3 % of rating         ± 0.3 % of rating) (TYP)               0.0005 A         0.000 A         0.005 A         0.000 A         0.005 A         0.005 A         0.001 A         0.005 A         0.005 A         0.004 A         0.005 A         0.004 A         0.005 A         0.001 Hz to 100.00 KHz         U         U         U         U         U         U         U         U         U         U         U </td <td>anatant</td> <td>Response</td> <td>*15 (TYP)</td> <td>3</td> <td>5 µs, 100 µs, 350 µs, 1 ı</td> <td>ms</td> <td>7</td> <td>0 µs, 100 µs, 350 µs, 1 r</td> <td>ns</td>	anatant	Response	*15 (TYP)	3	5 µs, 100 µs, 350 µs, 1 ı	ms	7	0 µs, 100 µs, 350 µs, 1 r	ns
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2          ± 0.3 % of rating         ± 0.3 % of rating) (TYP)	onstant	Response	N (TTF)		5 µs, 100 µs, 550 µs, 11	1113	1	ο μs, 100 μs, 550 μs, 11	115
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 us. 100 us. 350 us. 1 ms         70 us. 100 us. 350 us. 1 ms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2          ± 0.3 % of rating         ± 0.3 % of rating) (TYP)               0.005 A         0.0004 A         0.0005 A         0.000 A         0.005 A<		Overshoot	*16			5 % or le	ss (TYP)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 μs, 100 μs, 350 μs, 1 ms         70 μs, 100 μs, 350 μs, 1 ms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)            Settable range *1         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ± ± 0.5 % of rating         ± 0.5 % of rating         ± 0.01 Hz to 100.00 kHz         Equency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         TO μs, 100 μs, 350 μs, 1 ms         TO μs, 100 μs, 350 μs, 1 ms		Overshould	10			5 % 01 18	55 (117)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)            Settable range *1         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ± 0.5 % of rating         ± 0.5 % of rating         ± 0.01 Hz to 100.00 kHz         ±         equency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         TO µs, 100 µs, 350 µs, 1 ms         TO µs, 100 µs, 350 µs, 1 ms	aracter-	Ripple noi	se (rms) *17			51	mA		
Frequency         Settable range         0.01 Hz to 100.00 kHz           nstant         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.3 % of rating         ************************************		Rippie noi	se (mis) 17			51	IIA		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Instant rrent aracter-         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Notation of the sponse *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.3 % of rating         T         T         ± 0.3 % of rating         T         T         100 ppm / °C of rating) (TYP)         T <td>cs</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	cs								
Frequency         Settable range         0.01 Hz to 100.00 kHz           nstant         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.3 % of rating         T         T         ± 0.3 % of rating         T         T         100 ppm / °C of rating) (TYP)         T <td>63</td> <td>Load effect</td> <td>:t *18</td> <td></td> <td></td> <td>± (0.01 % of s</td> <td>etting + 1 mA)</td> <td></td> <td></td>	63	Load effect	:t *18			± (0.01 % of s	etting + 1 mA)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           requency         requency         Cto 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           nstant         Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Stant         5 % or less (TYP)           Ripple noise (rms) *17         5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.0005 A         0.0004 A         0.0005 A         0.000 A         0.005 A         0.005 A         0.001 A         0.005									
Frequency     Settable range     0.01 Hz to 100.00 kHz       Frequency     Settable range     0.01 Hz to 100.00 kHz       Frequency     response *14     DC to 10 kHz (-3 dB) (TYP)       Response *15 (TYP)     35 µs, 100 µs, 350 µs, 1 ms       Overshoot *16     5% or less (TYP)       Ripple noise (rms) *17     5 mA	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.0005 A         0.0004 A         0.0005 A         0.000 A         0.005 A         0.000 A         0.005 A         0.005 A         0.001 A         0.005 A         0.00 A </td <td></td> <td>Source eff</td> <td>ect *19</td> <td></td> <td></td> <td>± (0.01 % of s</td> <td>etting + 1 mA)</td> <td></td> <td></td>		Source eff	ect *19			± (0.01 % of s	etting + 1 mA)		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Image: Settable range         0vershoot *16         5 % or less (TYP)         5 mA           Image: Settable range         ± (0.01 % of setting + 1 mA)         1 mage: Settable range	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         V						± (0.01 % OT S			
Frequency         Settable range         0.01 Hz to 100.00 kHz           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Image: Settable range         16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         5% or less (TYP)           Image: Settable range         17         5 mA         5 mA           Load effect *16         ± (0.01 % of setting + 1 mA)         5 (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)         10000 for the top	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ±         ±         0.004 A         0.005 A         0.004 A         0.005 A           Memory *2         Settable range *1         O App to (210 % of rating) p-p         Events         Events         Events         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ± 0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           acquency         Settable range         0.01 Hz to 100.00 kHz         ± 0.5 % of rating         ± 0.5 kHz (-3 dB) (TYP)         Sponse *16 (TYP)         DC to 5 kHz (-3 dB) (TYP)         Sponse *15 (TYP)         DC to 5 kHz (-3 dB) (TYP)         Sponse *15 (TYP)         5 % or less (TYP)         sponse *16 (TYP)         Sponse *17 (S mA         5 mA         ± (0.01 % of setting + 1 mA)         ± (0.01 % o	C common	characteris	stics						
Frequency         Settable range         0.01 Hz to 100.00 kHz           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Image: Settable range         16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         5% or less (TYP)           Image: Settable range         17         5 mA         5 mA           Load effect *16         ± (0.01 % of setting + 1 mA)         5 (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)         10000 for the top	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / °C of rating) (TYP)         ±         ±         0.004 A         0.005 A         0.004 A         0.005 A           Memory *2         Settable range *1         O App to (210 % of rating) p-p         Events         Events         Events         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         ± 0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           acquency         Settable range         0.01 Hz to 100.00 kHz         ± 0.5 % of rating         ± 0.5 kHz (-3 dB) (TYP)         Sponse *16 (TYP)         DC to 5 kHz (-3 dB) (TYP)         Sponse *15 (TYP)         DC to 5 kHz (-3 dB) (TYP)         Sponse *15 (TYP)         5 % or less (TYP)         sponse *16 (TYP)         Sponse *17 (S mA         5 mA         ± (0.01 % of setting + 1 mA)         ± (0.01 % o	equency re	esolution				0.0	1 Hz		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         0.01 Hz to 100.00 kHz         DC to 5 kHz (-3 dB) (TYP)           Image: Settable range         0.01 kHz (-3 dB) (TYP)         35 µs, 100 µs, 350 µs, 1 ms           Image: Settable range         0.01 kHz (-3 dB) (TYP)         35 µs, 100 µs, 350 µs, 1 ms           Image: Settable range         0.01 kHz (-3 dB) (TYP)         35 µs, 100 µs, 350 µs, 1 ms           Image: Overshoot *16         5 % or less (TYP)         35 µs, 100 µs, 350 µs, 1 ms           Image: Overshoot *16         5 mA         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         5	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / °C of rating) (TYP) <td< td=""><td>equency re</td><td>esolution</td><td></td><td></td><td>-</td><td>0.0</td><td>I HZ</td><td></td><td></td></td<>	equency re	esolution			-	0.0	I HZ		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / *C of rating) (TYP) <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>									
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant urrent haracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         5	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / *C of rating) (TYP) <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>									
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)		Coursey				1 200	nnm		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant irrent aracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5 % or less (TYP)           Riple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         5	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± (100 ppm / *C of rating) (TYP) <td< td=""><td>equency A</td><td>Accuracy</td><td></td><td></td><td></td><td>+ 200</td><td>) ppm</td><td></td><td></td></td<>	equency A	Accuracy				+ 200	) ppm		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant urrent         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         5	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating         ±         ±         0.0005 A         0.0004 A         0.0005 A           mperature coefficient         ± 0.3 % of rating) (TYP)	equency A	Accuracy				± 200	) ppm		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         it (100 ppm / °C of rating) (TYP)         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           rerent         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           accuracy *13         ± 0.5 % of rating         ± 0.5 % of rating         0.01 Hz to 100.00 kHz         0.05 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)         spose *16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         TO µs, 100 µs, 350 µs, 1 ms         TO µs, 100 µs, 350 µs, 1 ms         100 µs (TYP)         100 µs (TYP) <td>equency A</td> <td>Accuracy</td> <td></td> <td></td> <td></td> <td>± 200</td> <td>ppm</td> <td></td> <td></td>	equency A	Accuracy				± 200	ppm		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         it (100 ppm / °C of rating) (TYP)         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           rerent         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           accuracy *13         ± 0.5 % of rating         ± 0.5 % of rating         0.05 A         0.00 kHz         0.05 A         0.05 A <t< td=""><td>счиспсу А</td><td>uauy</td><td></td><td></td><td></td><td>± 200</td><td>, hhiii</td><td></td><td></td></t<>	счиспсу А	uauy				± 200	, hhiii		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Ripple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           C common characteristics         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         imposed in the constraint of the cons		,							
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant urrent haracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         5% or less (TYP)           Riple noise (rms) *17         5 mA           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         it (100 ppm / °C of rating) (TYP)         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           rerent         Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           accuracy *13         ± 0.5 % of rating         ± 0.5 % of rating         0.05 A         0.00 kHz         0.05 A         0.05 A <t< td=""><td>ween</td><td></td><td></td><td></td><td></td><td>l inear and</td><td>logarithmic</td><td></td><td></td></t<>	ween					l inear and	logarithmic		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant irrent naracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Norshot         Response *16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Structure         5 % or less (TYP)           Nore effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz           equency resolution         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ±         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         Image: Coefficient in the coefficient in th	veeh	1				Linear and	oganunnic		
Frequency         Settable range         0.01 Hz to 100.00 kHz           onstant irrent naracter- tics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Norshot         Response *16 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Structure         5 % or less (TYP)           Nore effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz           equency resolution         0.01 Hz	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ±         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         Image: Coefficient         Image: Coefficient         Coefficient         0.003 A         0.004 A         0.005 A         0.03 A         0.04 A         0.05 A         0.05 A         0.05 A         0.03 A         0.04 A         0.05 A <td></td> <td>Туре</td> <td></td> <td></td> <td>Sine wave, squa</td> <td>are wave, triangle wave,</td> <td>and 16 user-defined arb</td> <td>pitrary waveforms</td> <td></td>		Туре			Sine wave, squa	are wave, triangle wave,	and 16 user-defined arb	pitrary waveforms	
Frequency     Settable range     0.01 Hz to 100.00 kHz       Prequency     Frequency response *14     DC to 10 kHz (-3 dB) (TYP)     DC to 5 kHz (-3 dB) (TYP)       Persona     *16 (TYP)     35 µs, 100 µs, 350 µs, 1 ms     70 µs, 100 µs, 350 µs, 1 ms       Overshoot *16     5% or less (TYP)       Riple noise (rms) *17     5 mA       Load effect *18     ± (0.01 % of setting + 1 mA)       Source effect *19     ± (0.01 % of setting + 1 mA)       Common characteristics     0.01 Hz       equency resolution     0.01 Hz       equency Accuracy     ± 200 ppm       weep     Linear and logarithmic	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         ± (100 ppm / °C of rating) (TYP)          Settable range *1         0 App to (210 % of rating) p.p         0 App to (210 % of rating) p.p          Resolution *12         0.03 A         0.04 A         0.05 A         0.03 A         0.04 A         0.05 A           Accuracy *13         0.04 A         0.05 A         0.03 A         0.04 A         0.05 % of rating         0.01 Hz to 100.00 KHz         0.01 Hz         1.0.01 Hz	avoform		0			- n +-	350°		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Nonstant Intrent varacter:         Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Swore (rms) *17         SmA         5 % or less (TYP)           Load effect *18         ± (0.01 % of setting + 1 mA)         Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz         0.01 Hz         ± 200 ppm         ± 200 ppm           weep         Linear and logarithmic         Type         Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         mperature coefficient         0 App to (210 % of rating) p-p         means the second transmission of trating tratex witent of trate second transmission of transmission o	aveform	Start phas	e			0 to	359°		
Frequency         Settable range         0.01 Hz to 100.00 kHz           Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Nonstant Intrent varacter:         Response *15 (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         Swore (rms) *17         SmA         5 % or less (TYP)           Load effect *18         ± (0.01 % of setting + 1 mA)         Source effect *19         ± (0.01 % of setting + 1 mA)           Common characteristics         0.01 Hz         0.01 Hz         ± 200 ppm         ± 200 ppm           weep         Linear and logarithmic         Type         Sine wave, square wave, triangle wave, and 16 user-defined arbitrary waveforms	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         mperature coefficient         ± (100 ppm / °C of rating) (TYP)         mperature coefficient         0 App to (210 % of rating) p-p         means the second transmission of trating tratex witent of trate second transmission of transmission o		Square	ave duty cvcle	0.1 % to 99.9 %	6 (f < 100 Hz). 1 % to 99	% (100 Hz ≤ f < 1 kHz).	10 % to 90 % (1 kHz ≤ f	< 10 kHz), and fixed to 5	0 % (10 kHz ≤ f)
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)           Prequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Prequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Prequency 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)         100 µs, 350 µs, 1 ms           Overshoot *16         5 mA         100.01 % of setting + 1 mA)           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         0.01 Hz           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           aveform         Start phase         0 to 359°	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0005 A           curacy *2         ± 0.3 % of rating         ± 0.3 % of rating) cTP         merature *100 ppm / °C of rating) (TYP)         settable range *1         0 App to (210 % of rating) p-p         ************************************		Square we	, - , •		,	( <u> </u>		,,	
Frequency         Settable range         0.01 Hz to 100.00 kHz           Constant current character- istics         Frequency response *14         DC to 10 kHz (-3 dB) (TYP)         DC to 5 kHz (-3 dB) (TYP)           Qvershoot *16         S5 wor less (TYP)         35 µs, 100 µs, 350 µs, 1 ms         70 µs, 100 µs, 350 µs, 1 ms           Overshoot *16         S wor less (TYP)         0.01 % of setting + 1 mA)           Load effect *18         ± (0.01 % of setting + 1 mA)           Source effect *19         0.01 Hz           Frequency resolution         0.01 Hz           Frequency Accuracy         ± 200 ppm           Sweep         Linear and logarithmic           Waveform         Start phase         0 to 359°	Fine feature *11         0.0003 A         0.0004 A         0.0005 A         0.0003 A         0.0004 A         0.0007           curacy *2         ± 0.3 % of rating         ± 100 ppm / °C of rating) (TYP)		Sauaro wa	ive duty cycle	0.1 % to 99.9 %	6 (f < 100 Hz), 1 % to 99	% (100 Hz ≤ f < 1 kHz),	10 % to 90 % (1 kHz ≤ f	< 10 kHz), and fixed to 5	0 % (10 kHz ≤

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

A frequency where the amplitude ratio of the output voltage to the external signal input voltage is 3 dB (when the reference/frequency) is 1 kHz, the response is 3.5 µs, and when a rated load is connected). The rise or fall time (at rated load; excluding when output is turned on and off). The frequency response is based on the specified response setting (frequency bandwidth = 0.35/the rise time). Rise time: The time it takes for the output voltage to rise from 10 % to 90 % of the rating when the output voltage is changed from 0 V to the rated voltage. Fall time: The time it takes for the output current to fall from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 A. \*5:

\*8: The measurement frequency bandwidth is 10 Hz to 1 MHz (at the output terminals).
\*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).
\*11: You can set the DC current in 0.01 A (0.0001 A for the fine feature) steps, but it may not change at this resolution depending on the relationship with the internal D / A resolution.
\*12: You can set the AC current in 0.01 A steps, but it may not change at this resolution depending on the relationship with the internal D / A resolution.

[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.



	ut		PBZ60-20.1 SR	PBZ60-26.8 SR	PBZ60-33.5 SR	PBZ80-15 SR	PBZ80-20 SR	PBZ80-25 SR	
	Nominal in	put voltage			200 Vac t	o 240 Vac			
	Voltage ra	nge			180 Vac t	o 250 Vac			
	Frequency	range			47 Hz t	o 63 Hz			
put rating	Current		15 Aac or less	20 Aac or less	25 Aac or less	15 Aac or less	20 Aac or less	25 Aac or less	
	Inrush cur	rent	120 Apeak or less	160 Apeak or less	200 Apeak or less	120 Apeak or less	160 Apeak or less	200 Apeak or les	
	Power		2700 VA or less	3600 VA or less	4500 VA or less	2700 VA or less	3600 VA or less	4500 VA or less	
	Power fact	or			0.95 TYP (when the i	nput voltage is 200 V)			
	Power		1206 W	1608 W	2010 W	1200 W	1600 W	2000 W	
utput ting	Voltage			± 60 V			± 80 V		
	Current		± 20.1 A	± 26.8 A	± 33.5 A	± 15 A	± 20 A	± 25 A	
utput	Output ter	minal			Rear panel ou	tput terminals			
rminal	Isolation V	oltage		500 Ve	dc Only the output's C	OM terminal can be gro	unded.		
onstant Vo	ltage (CV)								
		Bipolar mode			0 V to ± (105	% of rating)			
	Settable range *1	Unipolar mode			0 V to + (105	i % of rating)			
C voltage	range .	Fine feature			±5% o	frating			
5 voltage	Resolution	1			0.002 V (0.0002 V	for the fine feature)			
	Accuracy	*2			± (0.05 % of setting	+ 0.05 % of rating)			
	Temperatu	ire coefficient			± 100 ppm / °C	of rating (TYP)			
		Settable range *1			0.0 Vpp to (210	% of rating) pp			
Qualtana	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 100 kHz	(-3 dB) (TYP)			
	Response	*5 (TYP)			3.5 µs, 10 µs,	35 µs, 100 µs			
onstant	Overshoot	*6			5 % or le	ss (TYP)			
oltage naracter-	Ripple	(p-p) *7	40 mV (TYP)						
tics	noise	(rms) *8	6 mV						
	Load effect	t *9	± (0.005 % of setting + 1 mV)						
	Source eff	ect *10	± (0.005 % of setting + 1 mV)						
onstant cu	rrent (CC)								
		Dinalar mada			0 A to ± (105	% of rating)			
		Bipolar mode				0/ of roting)			
	Settable	Unipolar mode			0 A to ± (105	% of fatility)			
	Settable range *1				0 A to ± (105 ± 5 % c				
C current		Unipolar mode Fine feature	0.003 A	0.004 A			0.004 A	0.005 A	
C current	range *1	Unipolar mode Fine feature	0.003 A 0.0003 A	0.004 A 0.0004 A	± 5 % c	f rating	0.004 A 0.0004 A	0.005 A 0.0005 A	
C current	range *1	Unipolar mode Fine feature *11 Fine feature *11			± 5 % c	f rating 0.003 A 0.0003 A			
C current	range *1 Resolution Accuracy * Temperatu	Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient			± 5 % c 0.005 A 0.0005 A ± 0.3 %	f rating 0.003 A 0.0003 A			
C current	range *1 Resolution Accuracy * Temperatu	Unipolar mode Fine feature *11 Fine feature *11 2			± 5 % c 0.005 A 0.0005 A ± 0.3 %	f rating 0.003 A 0.0003 A of rating of rating) (TYP)			
	range *1 Resolution Accuracy * Temperatu	Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient			± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C	f rating 0.003 A 0.0003 A of rating of rating) (TYP)			
	range *1 Resolution Accuracy * Temperatu	Unipolar mode Fine feature *11 Fine feature *11 2 re coefficient Settable range *1	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 S	f rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current	Unipolar mode Fine feature *11 Fine feature *11 22 re coefficient Settable range *1 Resolution *12	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 %	f rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A	0.0004 A	0.0005 A	
	range *1 Resolution Accuracy * Temperatu Current Frequency	Unipolar mode Fine feature *11 Fine feature *11 22 re coefficient Settable range *1 Resolution *12 Accuracy *13	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 % 0.01 Hz to	f rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Frequency	Unipolar mode Fine feature *11 Fine feature *11 ?? Settable range *1 Resolution *12 Accuracy *13 Settable range	0.0003 A	0.0004 A	± 5 % c 0.005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz	f rating 0.003 A 0.0003 A of rating of rating) (TYP) % of rating) p-p 0.03 A of rating 100.00 kHz	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Frequency	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	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs	f 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)	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot	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	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs	f 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)	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Accuracy *13 Settable range response *14 *15 (TYP) *16 set(rms) *17	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App to (210 % 0.05 A ± 0.5 % 0.01 Hz to DC to 10 kHz 35 µs, 100 µs 5 % or le	f 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)	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi:	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App 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	f 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) nA	0.0004 A	0.0005 A	
C current	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effect	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18 ect *19	0.0003 A	0.0004 A	± 5 % c 0.005 A 0.0005 A ± 0.3 % ± (100 ppm / °C 0 App 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	f 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) nA etting + 1 mA)	0.0004 A	0.0005 A	
C current onstant urrent iaracter- tics C common	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effec Source eff characteris	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18 ect *19	0.0003 A	0.0004 A	$\begin{array}{c} \pm 5 \ \% \ c \\ 0.005 \ A \\ 0.0005 \ A \\ \pm 0.3 \ \% \\ \end{array}$	f 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) nA etting + 1 mA)	0.0004 A	0.0005 A	
C current onstant irrent iaracter- tics C common equency r	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effec Source eff characteris	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18 ect *19	0.0003 A	0.0004 A	$\begin{array}{c} \pm 5 \ \% \ c \\ 0.005 \ A \\ 0.0005 \ A \\ \pm 0.3 \ \% \\ \end{array}$	f 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) nA etting + 1 mA) etting + 1 mA)	0.0004 A	0.0005 A	
C current onstant urrent haracter- tics C common requency r requency A	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effec Source eff characteris	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18 ect *19	0.0003 A	0.0004 A	$\begin{array}{c} \pm 5 \ \% \ c \\ 0.005 \ A \\ 0.0005 \ A \\ \pm 0.3 \ \% \\ 1 \ (100 \ ppm / \ ^{\circ}C \\ 0 \ App \ to \ (210 \ ^{\circ}C \\ 0.05 \ A \\ \pm 0.5 \ \% \\ 0.01 \ Hz \ to \\ DC \ to \ 10 \ HHz \\ 35 \ \mu s, \ 100 \ \mu s \\ 5 \ \% \ or \ le \\ 5 \ \% \ or \ le \\ 1 \ (0.01 \ \% \ of \ s \\ \pm (0.01 \ \% \ of \ s \\ \pm (0.01 \ \% \ of \ s \\ 1 \ (0.01 \ \% \ of \ s \ s \ s \ s \ s \ s \ s \ s \ s \ $	f 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) nA etting + 1 mA) etting + 1 mA)	0.0004 A	0.0005 A	
C current onstant urrent naracter- tics	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effec Source eff characteris	Unipolar mode Fine feature *11 Fine feature *11 2 rec coefficient Settable range *1 Resolution *12 Accuracy *13 Settable range response *14 *15 (TYP) *16 se (rms) *17 t *18 ect *19	0.0003 A	0.0004 A	$\begin{array}{c} \pm 5 \ \% \ c \\ 0.005 \ A \\ 0.0005 \ A \\ \pm 0.3 \ \% \\ 1 \ (100 \ ppm / \ ^{\circ}C \\ 0 \ App \ to \ (210 \ ^{\circ}C \\ 0.05 \ A \\ \pm 0.5 \ \% \\ 0.01 \ Hz \ to \\ DC \ to \ 10 \ HHz \\ 35 \ \mu s, \ 100 \ \mu s \\ 5 \ \% \ or \ le \\ 5 \ \% \ or \ le \\ 1 \ (0.01 \ \% \ of \ s \\ \pm (0.01 \ \% \ of \ s \\ \pm (0.01 \ \% \ of \ s \\ 1 \ (0.01 \ \% \ of \ s \ s \ s \ s \ s \ s \ s \ s \ s \ $	f 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) nA etting + 1 mA) etting + 1 mA) Hz 1 ppm logarithmic	0.0004 A	0.0005 A	
C current onstant urrent haracter- tics C common requency r equency A	range *1 Resolution Accuracy * Temperatu Current Frequency Response Overshoot Ripple noi: Load effec Source eff characteris esolution vccuracy	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 se (rms) *17 t *18 ect *19 stics	0.0003 A	0.0004 A	$\begin{array}{c} \pm 5 \% c \\ 0.005 \text{ A} \\ 0.0005 \text{ A} \\ \pm 0.3 \% \\ \pm (100 \text{ ppm / }^{\circ}\text{C} \\ 0 \text{ App to } (210 \% \\ 0.05 \text{ A} \\ \pm 0.5 \% \\ 0.01 \text{ Hz to} \\ 0.01 \text{ Hz to} \\ 0 \text{ DC to } 10 \text{ kHz} \\ 35 \mu\text{s}, 100 \mu\text{s} \\ 5 \% \text{ or le} \\ \pm (0.01 \% \text{ of s} \\ \pm (0.01 \% \text{ of s} \\ \pm (0.01 \% \text{ of s} \\ \pm 2000 \\ 1 \text{ Linear and} \end{array}$	f 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) 100.00 kHz (-3 dB) (TYP) nA etting + 1 mA) etting + 1 mA) HZ ppm logarithmic and 16 user-defined arb	0.0004 A	0.0005 A	

 \*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 response changes according to the road impedance. When no total any second and off). \*15: The rise of fall time (at rated load; excluding when output is turned on and off). The rise and fall times change according to the load impedance. Rise time: The time it takes for the output current to rise from 10 % to 90 % of the rating when the output current is

changed from the rated current. Fail time: The time it takes for the output current to fail from 90 % to 10 % of the rating when the output current is changed from the rated current to 0 Å.

\*16: Under short circuit or rated load.

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

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

Measureme	ent function	PBZ20-60 SR	PBZ20-80 SR	PBZ20-100 SR	PBZ40-30 SR	PBZ40-40 SR	PBZ40-50 SR	
Voltage	Measurement range		I	120 % c	of rating			
measure- ment	Resolution			0.00	01 V			
(DC)	Accuracy *1			± (0.05 % of reading	g + 0.05 % of rating)			
	Measure- AC			120 % of r	rating / CF			
/oltage	ment range DC + AC			120 % c	of rating			
neasure-	Resolution			0.00	01 V			
nent AC and			±(0.5 % d	of reading + 0.1 % of ration	ng) in the range of 5 Hz	to 10 kHz		
DC + AC)	Accuracy *1, *2		±(1 % of i	reading + 0.2 % of rating	) in the range of 10 kHz	to 50 kHz		
			±(2 % of r	eading + 0.2 % of rating)	) in the range of 50 kHz	to 100 kHz		
Voltage	Measurement range			120 % c	of rating			
neasure- nent	Resolution			0.0	1 V			
(PEAK)	Accuracy *1, *3			± 0.5 %	of rating			
	Measurement range			120 % c	of rating			
Current	Resolution	0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A	
neasure- nent 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)	
	Temperature coefficient			± (150 ppm / °C	of rating) (TYP)	1		
	Measure- AC			120 % of r	rating / CF			
Current	ment range DC + AC			120 % c	of rating			
neasure- nent	Resolution	0.003A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A	
AC, DC + AC)			±	(3 % of reading + 0.1 %	of rating) (5 Hz to 10 kH	z)		
50 . 7.07	Accuracy *1, *2		±(1	10 % of reading + 1 % of	rating) (10 kHz to 100 kl	Hz)		
Current	Measurement range			120 % c	of rating			
neasure- nent	Resolution	0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A	
PEAK)	Accuracy *1, *3		L	± 0.5 %	of rating	1	1	
Measureme	ent time (Aperture)			100 µs te	o 3600 s			
General		·						
Operating te	emperature range			0 °C to +40 °C (+	32 °F to +104 °F)			
Operating h	umidity range	20 %rh to 85 %rh (no condensation)						
Storage terr	nperature range	-25 °C to +70 °C (-13 °F to +158 °F)						
Storage hur	midity range			90 %rh or less (r	no condensation)			
	Across the primary circuit and the output terminals				( ) <b>70</b> 0 ( ) 1 ( ) 1 ( )			
Insulation resistance	Across the primary circuit and chassis		500	) Vdc, 30 MΩ or greater	(at 70 %m numidity of it	-55)		
	Across the output terminals and chassis *4	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater	500 Vdc, 0.20 MΩ or greater	
Withstand	Across the primary circuit and the output terminals							
voltage	Across the primary circuit and chassis			NO abnormanties at 1	1500 Vac for 1 minute			
eakage cu	rrent (250 V / 60 Hz)			10 mA	or less			
Earth contin	nuity			100 Aac, 0	.1 Ω or less			
Cooling met	thod		Force	ed air cooling using varia	able-speed, heat-sensiti	ve fan		
Battery bacl	kup		Settings are retaine	d when the power is off.	At least three years of b	attery life (at 25 °C).		
Veight		Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg (352.74 lbs)	Approx. 110 kg (242.51 lbs)	Approx. 130 kg (286.60 lbs)	Approx. 160 kg	
		432.6(17.03") (545(21.46"))W×		1			(352.74 lbs)	
Dimensions (maximum)	s 	402.0(17.03) (043(21.40)))) 579.4(22.81") (685(26.97"))H× 700(27.56") (735(28.94"))Dmm (inches)	432.6(17.03") (545(21.46"))W× 712.1(28.04") (815(32.09"))H× 700(27.56") (735(28.94"))Dmm (inches)	432.6(17.03") (545(21.46"))W× 844.8(33.26") (950(37.40"))H× 700(27.56") (735(28.94"))Dmm (inches)	432.6(17.03") (545(21.46"))W× 579.4(22.81") (685(26.97"))H× 700(27.56") (735(28.94"))Dmm (inches)	432.6(17.03") (545(21.46"))W× 712.1(28.04") (815(32.09"))H× 700(27.56") (735(28.94"))Dmm (inches)	(352.74 lbs) 432.6(17.03") (545(21.46"))W> 844.8(33.26") (950(37.40"))H> 700(27.56") (735(28.94"))Dmr (inches)	

<sup>\*1:</sup> At an ambient temperature of 23 °C ± 5 °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

[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.



Measureme	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		
Voltage measure-	Resolution	1			0.00	01 V		
ment (DC)	Accuracy *	*1			± (0.05 % of reading	g + 0.05 % of rating)		
		AC				ating / CF		-
	Measure- ment range				120 % 0	-		
Voltage measure-	Resolution				0.00			
ment	Resolution	I		1/0 F 8/ 4				
(AC and DC + AC)					of reading + 0.1 % of rati			
,	Accuracy *	^1, ^2			reading + 0.2 % of rating	-		
				±(2 % of r	eading + 0.2 % of rating	-	0 100 kHz	
Voltage measure-	Measurem				120 % 0			
ment	Resolution				0.0			
(PEAK)	Accuracy *				± 0.5 %	_		
	Measurem	ent range		1	120 % d		1	1
Current	Resolution		0.003 A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A
measure- ment (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)		
	Measure-	AC			120 % of r	ating / CF		
Current	ment range	DC + AC			120 % (	of rating		
measure- ment	Resolution	1	0.003A	0.004 A	0.005 A	0.003 A	0.004 A	0.005 A
(AC and DC + AC)				1	± (3 % of reading	+ 0.1 % of rating)	1	1
DC ( AC)	Accuracy *	*1,*2			± (10 % of readin	q + 1 % of rating)		
Current	Measurem	ent range			120 % 0	÷ ;		
measure-	Resolution		0.03 A	0.04 A	0.05 A	0.03 A	0.04 A	0.05 A
ment (PEAK)	Accuracy *	1 *3			+05%			
(PEAK)	Accuracy *				± 0.5 %			
(PEAK) Measureme Protection F Overvoltage	ent time (Ape Features	erture)	ction, Overheat protection	on, Power limit (sink pow	100 µs t			
(PEAK) Measureme Protection F	ent time (Ape eatures e protection,	erture) Overcurrent prote	ction, Overheat protection	on, Power limit (sink pow	100 µs t			
(PEAK) Measureme Protection F Overvoltage Interface RS232C, Gf	ent time (Ape Features e protection, PIB, USB, L	overcurrent prote	ction, Overheat protectio	on, Power limit (sink pow	100 µs t	o 3600 s		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General	e protection, PIB, USB, L emperature	overcurrent prote AN	ction, Overheat protectio	on, Power limit (sink pow	100 μs t	o 3600 s o 40 °C		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating te Operating h	e protection, PIB, USB, L emperature umidity rang	overcurrent prote AN range	ction, Overheat protectio	on, Power limit (sink pow	100 µs t er) 0 °C tc 20 %RH to 85 %RH	o 3600 s o 40 °C		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating te	ent time (Ape eatures protection, PIB, USB, L emperature uumidity rang operature ra	overcurrent prote AN range ge nge	ction, Overheat protectio	on, Power limit (sink pow	100 µs t er) 0 °C tc 20 %RH to 85 %RF -25 °C	o 3600 s o 40 °C 4 (no condensation) to 70°C		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, Gf General Operating te Operating th Storage term	ent time (Ape Features e protection, PIB, USB, L emperature umidity rang inperature rai midity range Across the	erture) Overcurrent prote AN range ge nge e primary circuit	ction, Overheat protectio	on, Power limit (sink pow	100 µs t er) 0 °C tc 20 %RH to 85 %RH	o 3600 s o 40 °C 4 (no condensation) to 70°C		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Storage term Storage hum	ent time (Ape Features e protection, PIB, USB, L emperature umidity rang inperature rai midity range Across the	overcurrent prote AN range ge nge	ction, Overheat protectio		100 µs t er) 0 °C tc 20 %RH to 85 %RF -25 °C	o 3600 s o 40 °C 4 (no condensation) to 70°C no condensation)	255)	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating te Storage tem Storage tem	PIB, USB, L emperature umidity range Across the and the ou Across the	erture) Overcurrent prote AN range ge pge primary circuit tput terminals e primary circuit	ction, Overheat protectio		100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r	o 3600 s o 40 °C 4 (no condensation) to 70°C no condensation)	255)	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating the Storage term Storage hum	ent time (Ape eatures e protection, PIB, USB, L emperature umidity range Across the and the ou	erture) Overcurrent prote AN range ge pge primary circuit tput terminals e primary circuit	ction, Overheat protectio		100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r	o 3600 s o 40 °C 4 (no condensation) to 70°C no condensation)		
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating te Storage tem Storage tem	ent time (Ape Features e protection, PIB, USB, L emperature unidity range Across the and the ou Across the and chassi	erture) Overcurrent prote AN range ge primary circuit typut terminals e primary circuit is e output terminals	500 Vdc,		100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 90 %rh or greater 500 Vdc,	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc,	500 Vdc,	500 Vdc, 0.20 MΩ or greater
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating te Operating te Operating te Storage term Storage hum	PIB, USB, L exported to the output of the ou	erture) Overcurrent prote AN range ge nge primary circuit is primary circuit is o output terminals is *4 primary circuit		500 Vdc,	100 μs t er) 0 °C to 20 %RH to 85 %RH -25 °C 90 %rh or less (r 90 Vdc, 30 MΩ or greater	o 3600 s o 40 °C I (no condensation) to 70°C no condensation) (at 70 %rh humidity or le		500 Vdc, 0.20 MΩ or greater
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating te Storage tem Storage tem	ent time (Ape Features e protection, PIB, USB, L emperature umidity range Across the and the ou Across the and chassi Across the and the ou Across the	erture) Overcurrent prote AN AN range ge primary circuit tput terminals e primary circuit is e output terminals e output terminals e primary circuit tput terminals e primary circuit tput terminals	500 Vdc,	500 Vdc,	100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 90 %rh or greater 500 Vdc,	o 3600 s o 40 °C 4 (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater	500 Vdc,	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating te Operating te Storage hum Storage hum Insulation resistance	ent time (Ape eatures e protection, PIB, USB, L emperature unidity range nerature ran midity range Across the and the ou Across the and chassi Across the and chassi	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc,	100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 90 %rh or less (r 0 Vdc, 30 MΩ or greater 500 Vdc, 0.20 MΩ or greater No abnormalities at 1	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute	500 Vdc,	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GF General Operating te Operating te Operating te Storage hum Storage hum Insulation resistance Withstand voltage	ent time (Ape ent time (Ape eatures e protection, PIB, USB, L emperature umidity range andity range Across the and the ou Across the and chassi Across the and chassi Across the and chassi end the ou Across the and chassi	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc,	100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 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	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less	500 Vdc,	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating te Operating te Operating te Storage term Storage hum Insulation resistance Withstand voltage	Across the and chassi Across the and chassi rrrent (250 V nuity	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc, 0.25 MΩ or greater	100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 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	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or left 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less 1 Ω or less	500 Vdc, 0.25 MΩ or greater	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating to Operating to Operating to Storage term Storage hum Storage hum Storage hum Unsulation resistance Withstand voltage Leakage cut Earth contin Cooling met	PIB, USB, L entert time (Aper features e protection, PIB, USB, L emperature unidity range and thy range Across the and the ou Across the and chassi Across the and chassi and the ou Across the and the ou Across the and chassi	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc, 0.25 MΩ or greater Force	100 μs t er) 0 °C tc 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	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less 1 Ω or less ible-speed, heat-sensiti	500 Vdc, 0.25 MΩ or greater	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating to Operating to Storage term Storage hum Insulation resistance Withstand voltage	PIB, USB, L entert time (Aper features e protection, PIB, USB, L emperature unidity range and thy range Across the and the ou Across the and chassi Across the and chassi and the ou Across the and the ou Across the and chassi	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc, 0.25 MΩ or greater Force	100 μs t er) 0 °C tc 20 %RH to 85 %RH -25 °C 90 %rh or less (r 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	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less 1 Ω or less ible-speed, heat-sensiti	500 Vdc, 0.25 MΩ or greater	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating to Operating to Operating to Storage term Storage hum Storage hum Storage hum Unsulation resistance Withstand voltage Leakage cut Earth contin Cooling met	PIB, USB, L entert time (Aper features e protection, PIB, USB, L emperature unidity range and thy range Across the and the ou Across the and chassi Across the and chassi and the ou Across the and the ou Across the and chassi	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc,	500 Vdc, 0.25 MΩ or greater Force	100 μs t er) 0 °C tc 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	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less 1 Ω or less ible-speed, heat-sensiti	500 Vdc, 0.25 MΩ or greater	
(PEAK) Measureme Protection F Overvoltage Interface RS232C, GI General Operating te Operating te Operating te Storage term Storage hum Insulation resistance Withstand voltage Leakage cut Earth contin Cooling met Battery back	PIB, USB, L entert time (Aper features e protection, PIB, USB, L emperature umidity range and thy range Across the and the ou Across the and chassi Across the and chassi Across the and chassi rrent (250 V buity thod kup	erture) Overcurrent prote AN AN ge ge ge ge ge ge ge rimary circuit is e output terminals is *4 e primary circuit is e output terminals e primary circuit is e primary circuit is	500 Vdc, 0.33 MΩ or greater	500 Vdc, 0.25 MΩ or greater Force Settings are retained Approx. 130 kg	100 μs t er) 0 °C to 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 Vdc, 30 MΩ or greater 0 Vdc, 30 MΩ or greater 10 mA 100 Aac, 0 d air cooling using varia d when the power is off. Approx. 160 kg	o 3600 s o 40 °C t (no condensation) to 70°C no condensation) (at 70 %rh humidity or le 500 Vdc, 0.33 MΩ or greater 1500 Vac for 1 minute or less tl Ω or less tble-speed, heat-sensitiv At least three years of b Approx. 110 kg	500 Vdc, 0.25 MΩ or greater	0.20 MΩ or greater

<sup>\*1:</sup> At an ambient temperature of 23 °C ± 5 °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

#### **PBZ BP Series Specifications**

Input / Outpu	1		PBZ20-120 BP	PBZ20-140 BP	PBZ20-160 BP	PBZ20-180 BP	PBZ20-200 BP
		nput voltage			to 240 Vac		200 Vac
	Voltage ra	inge		180 Vac 1	to 250 Vac		180 Vac to 220 Va
	Frequency	y range		1	47 Hz to 63 Hz	T	Ū.
iput ating	Current		30 Aac or less	35 Aac or less	40 Aac or less	45 Aac or less	50 Aac or less
	Inrush cur	rent	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	6300 VA or less	7200 VA or less	8100 VA or less	9000 VA or less
	Power fac	tor		0.95 T	YP (when the input voltage is	200 V)	
	Power		2400 W	2800 W	3200 W	3600 W	4000 W
output ating	Voltage				± 20 V		
ating	Current		± 120 A	±140 A	±160 A	± 180 A	± 200 A
Dutput	Output ter	minal		Rear-panel	output terminals (OUTPUT1	OUTPUT2)	
rminal	Isolation v	oltage		300 Vdc Only	the output's COM terminal c	an be grounded.	
onstant Vo	oltage (CV)	-		- -		-	
		Bipolar mode			0 V to ± (105 % of rating)		
	Setting	Unipolar mode			0 V to + (105 % of rating)		
	range *1	Fine feature			±5 % of rating		
C voltage	Resolution			0.00	01 V (0.0001 V for the fine fea	ture)	
	Setting ac				05 % of setting + 0.05 % of ra		
		ure coefficient			± 100 ppm / °C of rating (TYF		
	Temperate	Setting range *1			00 Vp-p to (210 % of rating)		
	Voltage	Resolution		0.	0.1 V	-р	
C voltage	voltage						
	Fragueneu	Accuracy *3			± 0.5% of rating 0.01 Hz to 100.00 kHz		
		Setting range					
		y response *4			DC to 80 kHz ( -3 dB) (TYP)		
	Response				3.5 µs, 10 µs, 35 µs, 100 µs		
onstant C	Overshoo	t *6			5 % or less (TYP)		
haracter-	Ripple	(p-p)			50 mV (TYP)		
stics	noise	(rms)			6 mV		
	Load regu	lation *7			± (0.005 % of setting + 1 mV	)	
	Line regul	ation *8			± (0.005 % of setting + 1 mV	)	
Constant cu	irrent (CC)				-		
	Setting	Bipolar mode			0 A to ± (105 % of rating)		
	range *1	Unipolar mode			0 A to ± (105 % of rating)		
		Fine feature			± 5 % of rating		1
OC current	Resolution	n <u>*9</u>	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
		Fine feature	0.0006 A	0.0007 A	0.0008 A	0.0009 A	0.0010 A
	Setting ac	curacy *2			± 0.5 % of rating		
	Temperati	ure coefficient		ŧ	(100 ppm / °C of rating) (TY	P)	
		Setting range *1			0 Ap-p to (210 % of rating) p-	p	
C current	Current	Resolution *9	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A
o current		Accuracy *10			± 0.5 % of rating		
	Frequency	Setting range			0.01 Hz to 100.00 kHz		
	Frequency	y response *11			DC to 8 kHz (-3 dB) (TYP)		
`onotont	Response	*12 (TYP)			35 µs, 100 µs, 350 µs, 1 ms		
onstant urrent	Overshoo	t *13			5 % or less (TYP)		
haracter-	Ripple noi	ise (rms)			10 mA		
tics	Load regu				± (0.01 % of setting + 1 mA)		
	Line regul				± (0.01 % of setting + 1 mA)		
C commor	n characteri				( · · · · · · · · · · · · · · · · · · ·		
requency r					0.01 Hz		
					± 200 ppm		
requency 4					Linear and logarithmic		
requency A weep	Type			Sine wave, square wave	triangle wave, and 16 user de	fined arhitrary waveforms	
	Type Start phas	20		Sine wave, square wave,	triangle wave, and 16 user-de	efined arbitrary waveforms	

\*1: The peak value of the sum of the DC voltage and AC voltage is limited by the DC voltage's settable range.
\*2: At an ambient temperature of 23 °C25 °C.
\*3: 100 Hz sine wave, response 10 µs. Under no load.
\*4: A frequency where the amplitude ratio of the output voltage to the external signal input voltage is -3 dB (when the reference frequency is 1 kHz sine wave, the response is 3.5 µs, when the OUTPUT1 terminals are used, 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 response is based on the specified response setting (frequency bandwidth = 0.35/the rise time). Rise time: The time it takes for the output voltage to rise from 10 % to 90 % of the rating when the output voltage is changed from 0 V to the rated voltage.
Fall time: The time it takes for the output voltage to fall from 90 % to 10 % of the rating when the output voltage is changed from the rated voltage to 0 V.

\*6: Under no load or rated load.
\*7: The change in the output voltage in response to a fluctuation in the output current from 0 % to 100 % of the output current rating (measured at the sensing terminals when remote sensing is used).
\*8: The change in the output voltage in response to a 10 % fluctuation in the input voltage in reference to the nominal input voltage (measured at the sensing terminals when remote sensing is used).
\*9: The display resolution and the actual resolution are different. The display resolution of DC current is 0.001 A, but the actual resolution is 0.006 A. (When the fine feature is in use; the display resolution is 0.000 1 A, but the actual resolution of OC current and the actual resolution is 0.1 A, but the actual resolution of 0.1 A. The display resolution of 0.1 A.

[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.



			PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP	PBZ40-100 BP			
	1	put voltage		200 Vac t	o 240 Vac		200 Vac			
	Voltage ra			180 Vac t	o 250 Vac		180 Vac to 220 Vac			
	Frequency	-			47 Hz to 63 Hz					
nput	Current	0	30 Aac or less	35 Aac or less	40 Aac or less	45 Aac or less	50 Aac or less			
ating	Inrush cur	rent	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	6300 VA or less	7200 VA or less	8100 VA or less	9000 VA or less			
	Power fact	tor			YP (when the input voltage is					
	Power		2400 W	2800 W	3200 W	3600 W	4000 W			
output	Voltage				± 40 V					
ating	Current		± 60 A	±70 A	±80 A	± 90 A	± 100 A			
Output	Output ter	minal			Rear panel output terminals					
erminal	Isolation v			300 Vdc Only	the output's COM terminal ca	n be grounded.				
onstant Vo	oltage (CV)	onago								
	liuge (0 v )	Bipolar mode			0 V to ± (105 % of rating)					
	Setting	Unipolar mode			0 V to + (105 % of rating)					
	range *1	Fine feature			±5% of rating					
C voltage	Resolution			0.00	1 V (0.0001 V for the fine feat	(170)				
	Setting ac	uracy 2	± (0.05 % of setting + 0.05 % of rating) ± 100 ppm / °C of rating (TYP)							
	Temperatu	1								
	Valtaga	Setting range *1		0.	00 Vp-p to (210 % of rating) p	-p				
C voltage	Voltage	Resolution			0.1 V					
	<b>-</b>	Accuracy *3			± 0.5% of rating					
		Setting range			0.01 Hz to 100.00 kHz					
		response *4			DC to 80 kHz (-3 dB) (TYP)					
anatant	Response	. ,			3.5 µs, 10 µs, 35 µs, 100 µs 5 % or less (TYP)					
onstant oltage	Overshoot									
haracter-	Ripple	(p-p)		50 mV (TYP) 12 mV						
tics	noise	(rms)	12 mV							
	Load regu			± (0.005 % of setting + 1 mV)						
	Line regula	ation *8			± (0.005 % of setting + 1 mV)					
onstant cu	irrent (CC)									
	Setting	Bipolar mode			0 A to ± (105 % of rating)					
	range *1	Unipolar mode			0 A to ± (105 % of rating)					
		Fine feature			± 5 % of rating					
				0.007 A	0.008 A	0.009 A	0.010 A			
C current	Resolution	[	0.006 A							
C current		Fine feature	0.0006 A	0.0007 A	0.0008 A	0.0009 A	0.0010 A			
C current	Setting ac	Fine feature curacy *2			± 0.3 % of rating					
C current	Setting ac	Fine feature curacy *2 ure coefficient		±	± 0.3 % of rating (100 ppm / °C of rating) (TYF	)				
C current	Setting ac	Fine feature curacy *2 ure coefficient Setting range *1	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF ) Ap-p to (210 % of rating) p-p	)	0.0010 A			
	Setting ac	Fine feature curacy *2 are coefficient Setting range *1 Resolution *9		±	± 0.3 % of rating (100 ppm / °C of rating) (TYF ) Ap-p to (210 % of rating) p-p 0.08 A	)				
	Setting ac Temperatu Current	Fine feature curacy *2 ure coefficient Setting range *1 Resolution *9 Accuracy *10	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating	)	0.0010 A			
	Setting ac Temperatu Current Frequency	Fine feature curacy *2 are coefficient Setting range *1 Resolution *9 Accuracy *10 Setting range	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 0 Ap-p to (210 % of rating) p-p 0.08 A ± 0.5 % of rating 0.01 Hz to 100.00 kHz	)	0.0010 A			
	Setting ac Temperatu Current Frequency Frequency	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range response *11	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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)	)	0.0010 A			
C current	Setting ac Temperatu Current Frequency Response	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range response *11 *12 (TYP)	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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	)	0.0010 A			
C current	Setting ac Temperatu Current Frequency Response Overshoot	Fine feature curacy *2 rre coefficient Setting range *1 Resolution *9 Accuracy *10 Setting range response *11 *12 (TYP) *13	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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)	)	0.0010 A			
C current	Setting ac Temperatu Current Frequency Response Overshoot Ripple noi	Fine feature curacy *2 rre coefficient Setting range *1 Resolution *9 Accuracy *10 Setting range response *11 *12 (TYP) **13 se (rms)	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA	)	0.0010 A			
C current	Setting ac Temperatu Current Frequency Response Overshoot Ripple noi Load regu	Fine feature curacy *2 rre coefficient Setting range *1 Resolution *9 Accuracy *10 Setting range response *11 *12 (TYP) **13 se (rms) lation *14	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA)	)	0.0010 A			
C current Constant urrent haracter- tics	Setting ac Temperatu Current Frequency Frequency Response Overshoot Ripple noi: Load regul Line regula	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA	)	0.0010 A			
C current onstant urrent haracter- tics C commor	Setting ac Temperatu Current Frequency Frequency Response Overshoot Ripple nois Load regul Line regula	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)	)	0.0010 A			
C current Constant urrent haracter- stics C commor	Setting ac Temperatu Current Frequency Frequency Response Overshoot Ripple nois Load regul Line regula	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA)	)	0.0010 A			
C current constant urrent haracter- itics C commor requency r	Setting ac Temperatu Current Frequency Response Overshoot Ripple noi Load regul Line regula characteris	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA)	)	0.0010 A			
AC current Constant urrent iharacter- stics C commor requency / Sweep	Setting ac Temperatu Current Frequency Response Overshoot Ripple noi Load regul Line regula characteris	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	±	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA) ± (0.01 Hz	)	0.0010 A			
C current Constant urrent haracter- stics C commor requency <i>r</i> requency <i>A</i>	Setting ac Temperatu Current Frequency Response Overshoot Ripple noi Load regul Line regula characteris	Fine feature curacy *2 setting range *1 Resolution *9 Accuracy *10 Setting range r response *11 *12 (TYP) *13 se (rms) lation *14 ation *15	0.0006 A	± ( 0.07 A	± 0.3 % of rating (100 ppm / °C of rating) (TYF 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) 10 mA ± (0.01 % of setting + 1 mA) ± (0.01 % of setting + 1 mA) 0.01 Hz ± 200 ppm	) 0.09 A	0.0010 A			

\*10: With a 100 Hz sine wave, 35 µs response, and shorted output.
 \*11: A frequency where the ratio of the output current amplitude to the external signal input voltage amplitude is -3 dB (when the reference frequency is 100 Hz, the response is 35 µs, and when a rated load is connected). The frequency response change according to the load impedance. Frequency response decreases when the load

impedance increases.
\*12: The rise or fall time (at rated load; excluding when output is turned on and off). The rise and fall times change according to the load impedance.
Rise time: The time it takes for the output current to rise from 10 % to 90 % of the rating when the output current is

Changed from the tables in the output current to fail from 90 % to 10 % of the rating when the output current is changed from the rated current.

\*13: Under short circuit or rated load.
\*14: The change in the output current in response to a change in the output voltage from 10 % to 100 % of the rated output voltage.
\*15: The change in the output current in response to a ±10 % fluctuation 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 rating).

Measureme	ent function	PBZ20-120 BP	PBZ20-140 BP	PBZ20-160 BP		
oltage	Measurement range			120 % of rating		
easure- ent	Resolution			0.001 V		
(OC)	Accuracy *1		± (0.0	05 % of reading + 0.05 % of ra	ating)	
	Measure- AC			120 % of rating / CF		
oltage	ment range DC + AC			120 % of rating		
easure- ent	Resolution			0.001 V		
C and			±(0.5 % of r	eading + 0.1 % of rating) (5 H	z to 10 kHz)	
C + AC)	Accuracy *1, *2		±(1 % of rea	ding + 0.2 % of rating) (10 kH	z to 50 kHz)	
			±(2 % of read	ding + 0.2 % of rating) (50 kH	z to 100 kHz)	
oltage	Measurement range			120 % of rating		
easure- ent	Resolution			0.01 V		
EAK)	Accuracy *1, *3			± 0.5 % of rating		
	Measurement range			120 % of rating		
urrent	Resolution	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
easure-		± (0.3 % of reading+	± (0.3 % of reading+	± (0.3 % of reading+	± (0.3 % of reading+	± (0.3 % of reading-
ent IC)	Accuracy *1	1.6 % of rating)	1.9 % of rating)	2.2 % of rating)	2.5 % of rating)	2.8 % of rating)
	Temperature coefficient		<u> </u>	(150 ppm / °C of rating) (TYF	2)	1
	Measure- AC			120 % of rating / CF		
urrent	ment range DC + AC			120 % of rating		
easure- ent	Resolution	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
C and		0.00071		ading + 0.1 % of rating) (5 Hz		0.01071
C + AC)	Accuracy *1,*2			ading + 1 % of rating) (10 kHz		
urrant	Measurement range		1(10 % 0116	120 % of rating		
urrent easure-	Resolution	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A
ent 'EAK)	Accuracy *1,*3	0.00 A	0.07 A	± 0.5 % of rating	0.03 A	0.10 A
leasureme rotection F ivervoltage iterface	ent time (Aperture)	tion, Overheat protection, P	ower limit (sink power)	100 μs to 3600 s		
leasureme rotection F ivervoltage iterface S232C, Gl	ent time (Aperture) Features Protection, Overcurrent protection	tion, Overheat protection, P	ower limit (sink power)			
easureme rotection F vervoltage terface S232C, Gl eneral	ent time (Aperture) Features Protection, Overcurrent protection	tion, Overheat protection, P			)	
leasureme rotection F vervoltage terface S232C, Gl eneral perating te	ent time (Aperture) Features e protection, Overcurrent protec PIB, USB, LAN	tion, Overheat protection, P	(	100 μs to 3600 s	-	
leasureme rotection F vervoltage iterface S232C, G eneral perating te perating h	ent time (Aperture) Features e protection, Overcurrent protec PIB, USB, LAN emperature range	tion, Overheat protection, P	20	100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F	ion)	
leasureme rotection F wervoltage terface S232C, Gl eneral operating te operating h torage terr	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range iumidity range	tion, Overheat protection, P	( 	100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensat	ion) F)	
leasureme rotection F overvoltage iterface (S232C, Gl ieneral operating to operating h itorage terr	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range numidity range nperature range	tion, Overheat protection, P	( 	100 μs to 3600 s ) °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° ) %rh or less (no condensatic	ion) F)	
leasureme rotection F ivervoltage iterface \$232C, Gl eneral perating to perating to perating to torage terr torage hur sculation	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range umidity range nperature range midity range Between the primary circuit and chassis	tion, Overheat protection, P	( 	100 μs to 3600 s ) °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensat 5 °C to 70 °C (-13 °F to 158 °	ion) F)	
leasureme rotection F vervoltage terface S232C, Gl eneral perating te perating te perating te torage terr torage terr torage hur sullation	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range numidity range neperature range midity range Between the primary circuit	tion, Overheat protection, P	( 	100 μs to 3600 s ) °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° ) %rh or less (no condensatic	ion) F)	
leasureme rotection F vervoltage terface S232C, Gl eneral perating te perating te perating te torage terr torage terr torage hur sullation	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range numidity range midity range Between the primary circuit and chassis Between the primary circuit	tion, Overheat protection, P	( 	100 μs to 3600 s ) °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° ) %rh or less (no condensatic	ion) F)	300 Vdc, 0.1 MΩ or more
leasureme rotection F vervoltage iterface \$232C, Gl eneral perating te perating th torage terr torage hur issulation ssistance	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range numidity range midity range Between the primary circuit and chassis Between the primary circuit and the output terminals Between the output terminals	300 Vdc,	( 20 -2 9( 300 Vdc, 0.14 MΩ or more	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensations) 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more	ion) F) m) 300 Vdc, 0.11 MΩ or more	
easureme rotection F vervoltage terface S232C, Gl eneral perating te perating te prorage terr torage terr torage hur sulation sistance	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range umidity range hererature range midity range Between the primary circuit and chassis Between the primary circuit and the output terminals Between the output terminals and chassis Between the primary circuit	300 Vdc,	( 20 -2 9( 300 Vdc, 0.14 MΩ or more	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensations) 500 Vdc, 30 MΩ or more 300 Vdc,	ion) F) m) 300 Vdc, 0.11 MΩ or more	
easureme otection F vervoltage terface S232C, Gl eneral perating te perating to perating te perating h orage terr orage hur sulation sistance	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range mudity range midity range Between the primary circuit and chassis Between the primary circuit and chassis Between the output terminals Between the primary circuit and chassis Between the primary circuit and chassis Between the primary circuit and chassis Between the primary circuit and chassis Between the primary circuit	300 Vdc,	( 20 -2 9( 300 Vdc, 0.14 MΩ or more	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensations) 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more	ion) F) m) 300 Vdc, 0.11 MΩ or more	
easureme rotection F vervoltage terface S232C, Gl eneral perating h orage terr orage terr orage terr orage hur sulation sistance ithstand ltage	ent time (Aperture) Features e protection, Overcurrent protect PIB, USB, LAN emperature range numidity range midity range Between the primary circuit and chassis Between the primary circuit and the output terminals Between the primary circuit and chassis Between the primary circuit and chassis Between the primary circuit and chassis Between the primary circuit and chassis rrent (250 V / 60 Hz) *5	300 Vdc,	( 20 -2 9( 300 Vdc, 0.14 MΩ or more	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensatic 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more normalities at 1500 Vac for 1	ion) F) m) 300 Vdc, 0.11 MΩ or more	
easureme rotection F vervoltage terface S232C, Gl eneral perating te perating te perating te perating te rorage terr orage terr sistance	Int time (Aperture)         Features         e protection, Overcurrent protect         PIB, USB, LAN         emperature range         numidity range         perature range         midity range         Between the primary circuit and chassis         Between the primary circuit and the output terminals         Between the primary circuit and chassis         rrent (250 V / 60 Hz) *5         nuity	300 Vdc,	( 20 -2 90 300 Vdc, 0.14 MΩ or more No abr	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensatic 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more hormalities at 1500 Vac for 1 10 mA or less	ion) F) inn) 300 Vdc, 0.11 MΩ or more minute	
easureme rotection F vervoltage terface S232C, Gl eneral perating te perating te perating te perating te perating te torage terr torage terr torage terr sulation sistance	Protection, Overcurrent protection, Overcurrent, O	300 Vdc, 0.17 MΩ or more	300 Vdc, 0.14 MΩ or more No abr	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensation 500 Vdc, 30 MΩ or more 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more normalities at 1500 Vac for 1 10 mA or less 100 Aac, 0.1 Ω or less ing using variable-speed, he	ion) F) m) 300 Vdc, 0.11 MΩ or more minute	0.1 MΩ or more
easureme rotection F vervoltage terface S232C, Gl eneral perating h torage terr torage hur sulation sistance fithstand oltage easkage cu arth contin ooling met attery bac	Protection, Overcurrent protection, Overcurrent, O	300 Vdc, 0.17 MΩ or more	( 20 -2 90 300 Vdc, 0.14 MΩ or more No abr	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensation 500 Vdc, 30 MΩ or more 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more normalities at 1500 Vac for 1 10 mA or less 100 Aac, 0.1 Ω or less ing using variable-speed, he	ion) F) m) 300 Vdc, 0.11 MΩ or more minute	0.1 MΩ or more
leasureme rotection F lvervoltage iterface (S232C, Gl eneral operating te perating to torage terr torage hur torage hur sulation essistance	Int time (Aperture)         Features         a protection, Overcurrent protect         PIB, USB, LAN         emperature range         numidity range         neperature range         midity range         Between the primary circuit and the output terminals         Between the primary circuit and the output terminals         Between the primary circuit and chassis         Between the primary circuit and the output terminals         rrent (250 V / 60 Hz) *5         nuity         thod         kup	300 Vdc, 0.17 MΩ or more Approx. 255kg	( 20) -2 9( 300 Vdc, 0.14 MΩ or more No abs Forced air cool Settings are retained when th Approx. 280 kg	100 μs to 3600 s 100 μs to 3600 s 0 °C to 40 °C (32 °F to 104 °F %rh to 85 %rh (no condensati 5 °C to 70 °C (-13 °F to 158 ° 0 %rh or less (no condensatic 500 Vdc, 30 MΩ or more 300 Vdc, 0.13 MΩ or more 10 MA or less 100 Aac, 0.1 Ω or less ing using variable-speed, he e power is off. At least three Approx. 300 kg	ion) F) m) 300 Vdc, 0.11 MΩ or more minute at-sensitive fan years of battery life (at 25 °C Approx. 340 kg	0.1 MΩ or more

\*1: At an ambient temperature of 23 °C±5 °C.
\*2: When the input signal is in the 100 kHz bandwidth and has a crest factor of 3 or less (the measurement time is at least 10 times the input signal period).
\*3: Calibrated with a 1 kHz sine wave.
\*4: At 70 %th humidity or less
\*5: At 200V/60Hz for PBZ20-2008P

[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.



Measureme	ant function	PBZ40-60 BP	PBZ40-70 BP	PBZ40-80 BP	PBZ40-90 BP	PBZ40-100 BP
	Measurement range	FB240-00 BF	P D240-/0 DP	120 % of rating	F 0240-30 BF	PB240-100 BP
oltage easure-				0.001 V		
ent C)	Resolution Accuracy *1		+ (0.0		ating)	
0)	,		± (0.0	5 % of reading + 0.05 % of ra	aung)	
	Measure- ment range DC + AC			120 % of rating / CF		
ltage easure-				120 % of rating		
ent	Resolution			0.001 V		
C and C + AC)				eading + 0.1 % of rating) (5 H		
0 / (0)	Accuracy *1, *2			ding + 0.2 % of rating) (10 kH		
			±(2 % of read	ling + 0.2 % of rating) (50 kH	z to 100 kHz)	
oltage easure-	Measurement range			120 % of rating		
ent	Resolution			0.01 V		
PEAK)	Accuracy *1, *3			± 0.5 % of rating		
	Measurement range		1	120 % of rating		1
urrent easure-	Resolution	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
easure- ent IC)	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)
	Temperature coefficient		±	(150 ppm / °C of rating) (TYF	°)	
	Measure- AC			120 % of rating / CF		
urrent	ment range DC + AC			120 % of rating		
easure- ent	Resolution	0.006 A	0.007 A	0.008 A	0.009 A	0.010 A
C and C + AC)			±(3 % of re	ading + 0.1 % of rating) (5 Hz	to 10 kHz)	
0 (10)	Accuracy *1,*2		±(10 % of rea	ading + 1 % of rating) (10 kHz	: to 100 kHz)	
urrent	Measurement range			120 % of rating		
easure- ent	Resolution	0.06 A	0.07 A	0.08 A	0.09 A	0.10 A
EAK)	Accuracy *1, *3			± 0.5 % of rating		
easureme	ent time (Aperture)			100 µs to 3600 s		
S232C, G	PIB, USB, LAN					
	emperature range		(	°C to 40 °C (32 °F to 104 °F	)	
	numidity range			%rh to 85 %rh (no condensat	,	
	nperature range			5 °C to 70 °C (-13 °F to 158 °	,	
-	midity range			%rh or less (no condensation		
toruge nu	Between the primary circuit and chassis					
nsulation esistance	Between the primary circuit and the output terminals			500 Vdc, 30 $M\Omega$ or more		
4						
	Between the output terminals and chassis	300 Vdc, 0.17 MΩ or more	300 Vdc, 0.14 MΩ or more	300 Vdc, 0.13 MΩ or more	300 Vdc, 0.11 MΩ or more	300 Vdc, 0.1 MΩ or more
lithstand	Between the primary circuit and chassis		No obr	ormalities at 1500 Vac for 1	minute	
oltage	Between the primary circuit and the output terminals					
eakage cu	Irrent (250 V / 60 Hz) *5			15 mA or less		
arth contir	nuity			100 Aac, 0.1 $\Omega$ or less		
ooling me	thod		Forced air cool	ing using variable-speed, he	at-sensitive fan	
attery bac	kup	ţ	Settings are retained when th	e power is off. At least three	years of battery life (at 25 °C	).
eight		Approx. 255kg (562.18 lbs)	Approx. 280 kg (617.29 lbs)	Approx. 300 kg (661.39 lbs)	Approx. 340 kg (749.57 lbs)	Approx. 360 kg (793.66 lbs)
imensions	3	570(22.44") W× 1350(53.15")H×	570(22.44") W× 1350(53.15")H× 050(27.40")Dmm	570(22.44") W× 1350(53.15")H×	570(22.44") W× 1750(68.90")H× 050(27.40")Dmm	570(22.44") W× 1750(68.90")H×
		950(37.40")Dmm (inches)	950(37.40")Dmm (inches)	950(37.40")Dmm (inches)	950(37.40")Dmm (inches)	950(37.40")Dmm (inches)
ccessorie	s	. ,	anuals: Setup Guide (1 pc.), 0 J1 connector kit: Sock		1 pc / English: 1 pc.), Safety (2 pairs), Pins (30 pc.)	, ,

\*1: At an ambient temperature of 23 °C±5 °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: Galibrated with a 1 kHz sine wave.
\*4: At 70 %th humidity or less
\*5: At 200V /60 Hz for PBZ40-100BP

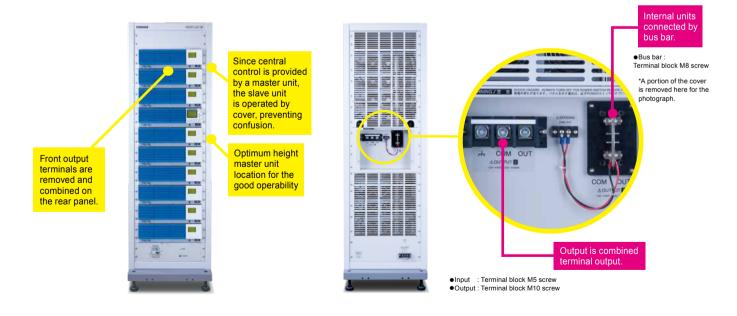
#### PBZ SR Series

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

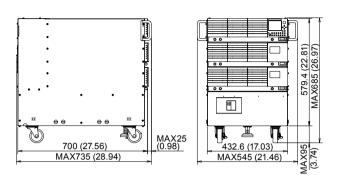
The Bipolar Pack package offers the safety and easy to use, with adopting the know-how of which details can be found in the system.



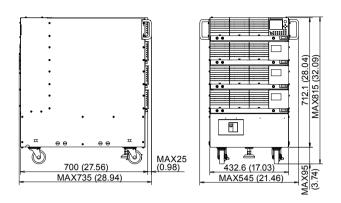


#### **External Dimensions**

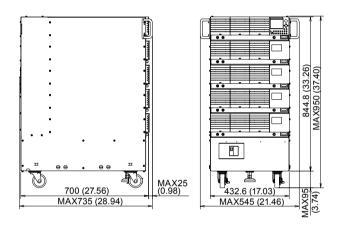
Unit: mm (inches)



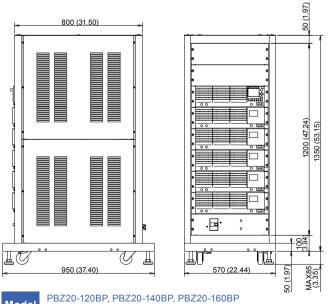
Model PBZ20-60SR, PBZ40-30SR, PBZ60-20.1SR, PBZ80-15SR



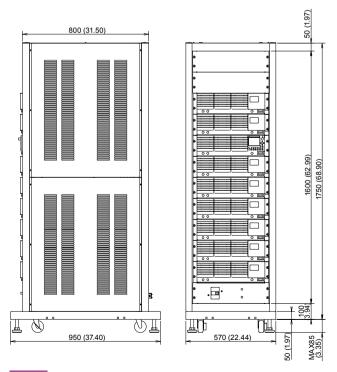
PBZ20-80SR, PBZ40-40SR, PBZ60-26.8SR, PBZ80-20SR Model



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



PBZ20-120BP, PBZ20-140BP, PBZ20-160BP PBZ40-60BP, PBZ40-70BP, PBZ40-80BP Model



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

#### ■ Intelligent Bipolar Power Supply

Model	Output rating	Model	Output rating	Model	Output rating
PBZ20-20A	±20 V/ ±20 A	PBZ40-40 SR	±40 V/ ±40 A	PBZ20-140 BP	±20 V/ ±140 A
PBZ20-20	±20 V/ ±20 A	PBZ40-50 SR	±40 V/ ±50 A	PBZ20-160 BP	±20 V/ ±160 A
PBZ40-10	±40 V/ ±10 A	PBZ60-20.1 SR	±60 V/ ±20.1 A	PBZ20-180 BP	±20 V/ ±180 A
PBZ60-6.7	±60 V/ ±6.7 A	PBZ60-26.8 SR	±60 V/ ±26.8 A	PBZ20-200 BP	±20 V/ ±200 A
PBZ80-5	±80 V/ ±5 A	PBZ60-33.5 SR	±60 V/ ±33.5 A	PBZ40-60 BP	±40 V/ ±60 A
PBZ20-60 SR	±20 V/ ±60 A	PBZ80-15 SR	±80 V/ ±15 A	PBZ40-70 BP	±40 V/ ±70 A
PBZ20-80 SR	±20 V/ ±80 A	PBZ80-20 SR	±80 V/ ±20 A	PBZ40-80 BP	±40 V/ ±80 A
PBZ20-100 SR	±20 V/ ±100 A	PBZ80-25 SR	±80 V/ ±25 A	PBZ40-90 BP	±40 V/ ±90 A
PBZ40-30 SR	±40 V/ ±30 A	PBZ20-120 BP	±20 V/ ±120 A	PBZ40-100 BP	±40 V/ ±100 A

#### ■ Cable Options

Model	Description	Remark
AC8-3P3M-M5C	AC input power cable	8sq Heavy PVC jacketed three-core cable 3 m (Only for SR series)
AC14-3P3M-M5C	AC input power cable	14sq Heavy PVC jacketed three-core cable 3 m (Only for BP series)
TL01-PLZ	Low inductance cable	Maximum allowable current: 100 A, Full length: 50 cm
TL02-PLZ *1	Low inductance cable *2	Maximum allowable current: 100 A, Full length: 1 m (For PBZ20 V, 40 V, and SR series)
TL03-PLZ *1	Low inductance cable *2	Maximum allowable current: 100 A, Full length: 2 m (For PBZ20 V, 40 V, and SR series)
LIC40-2P1M-M6M6	Low inductance cable *2	Maximum allowable current: 50 A, Full length: 1 m (For PBZ60 V, 80 V, and SR series)
LIC40-2P2M-M6M6	Low inductance cable *2	Maximum allowable current: 50 A, Full length: 2 m (For PBZ60 V, 80 V, 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)

#### Other Options

Model	Description	Remark
PK01-PBZ	Parallel operation kit	For bench-top
PK02-PBZ	Parallel operation kit	For EIA inch racks
PK03-PBZ	Parallel operation kit	For JIS millimeter racks
KRB3-TOS	Rack mount brackets	For EIA inch racks
KRB150-TOS	Rack mount brackets	For JIS millimeter racks; blank panel included
Wavy for PBZ	Sequence creation software	Operating environment: Windows Vista / Windows 7 / Windows 8 / Windows 10
LAN	LAN interface	IEEE488.2/SCPI
VS01	Vertical stand	580(22.83)W × 245(9.64)H × 350(13.78)Dmm(inch); stand only (maximum dimensions)



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