



± 60 V / ± 100 A max.

# Wide Output Range, Variety of Application

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## Automotive Components

- Steering motor
- ECU power supply circuit
- Electric pump (Water pump / Oil pump)

## Automotive Devices

- Power inductor
- Solenoid
- Connector
- High-power relay

## Wireless Charging

- Power supply for charging

## Driving of magnetic material

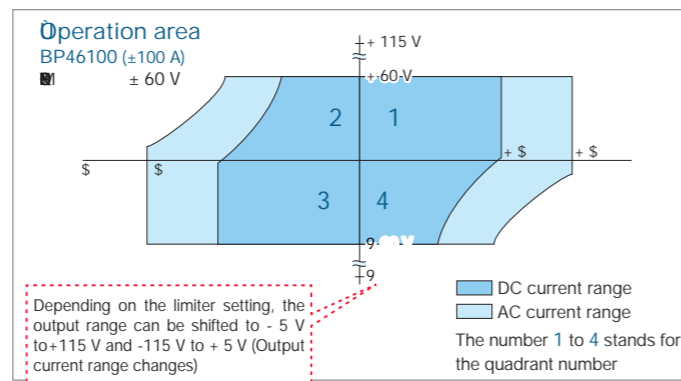
- Helmholtz coil

## Power supply for generating magnetic field

## Enriched Basic Performance and Wide Lineup

### Wide Range Output Area -Voltage / Current 4 Quadrants Operation

BP series can output in four quadrants and is capable of handling two directions of current, which are source (supply) and sink (absorption) current. From devices that generate back electromotive force such as solenoids, capacitive load such as electrolytic capacitor, and even to piezoelectric material charged with electromotive force and power sources and batteries such as fuel cells, you can drive the devices and systems that cannot be driven with generic DC power supply.



### High Voltage / Large Current / Wide Range, Constant Current Operation

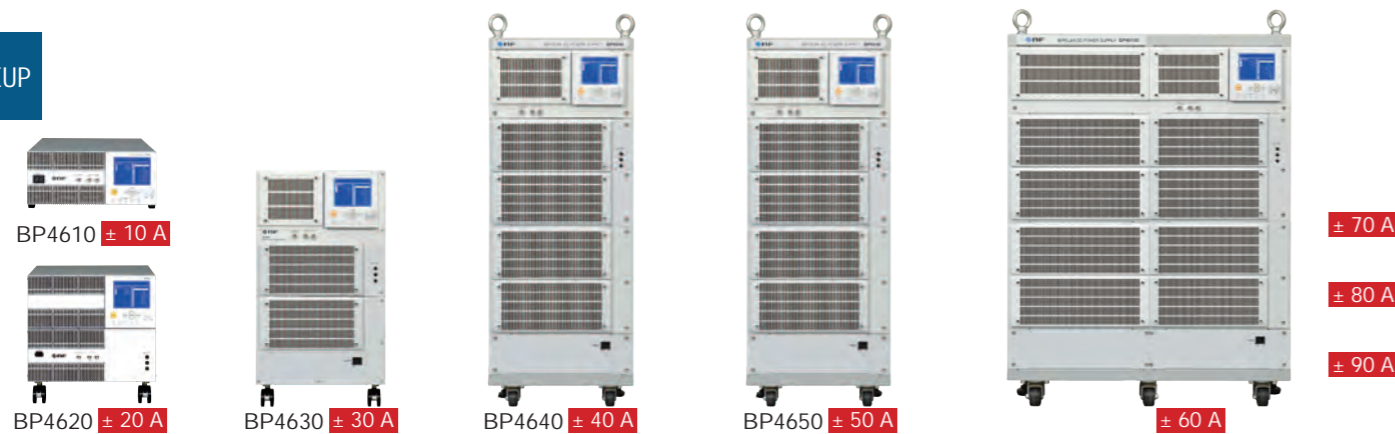
Output voltage is + / - 60 V covering the range required in testing vehicle electrical components. Also BP series have high current necessary for large parts, high speed required in driving actuators, and constant current operation effective in driving low impedance solenoids.

With such enriched specification satisfying all such requirements, BP series responds to the needs in development and test of devices.

With the lineup from + / - 10 A to + / - 100 A, BP will respond a variety of application

	BP4610	BP4620	BP4630	BP4640	BP4650	BP4660	BP4670	BP4680	BP4690	BP46100
Voltage	± 60 V, 120 Vp-p Depending on the limiter setting, the output range can be shifted to - 5 V to + 115 V and - 115 V to + 5 V (Output current range changes)									
Current	± 10 A (DC) ± 15 A (AC)	± 20 A (DC) ± 30 A (AC)	± 30 A (DC) ± 45 A (AC)	± 40 A (DC) ± 60 A (AC)	± 50 A (DC) ± 75 A (AC)	± 60 A (DC) ± 90 A (AC)	± 70 A (DC) ± 105 A (AC)	± 80 A (DC) ± 120 A (AC)	± 90 A (DC) ± 135 A (AC)	± 100 A (DC) ± 150 A (AC)
Low amplitude frequency response	DCUP200 kHz (CV, adjusted characteristics, amplitude 12 Vp-p), DC™70 kHz (CC, adjusted characteristics, amplitude 12 Vp-p)									
Operation mode	Constant voltage/Constant current operation are selectable									

## LINEUP



The appearance and dimension of BP4670 / BP4680 / BP4690 are the same as BP4660 / BP46100.

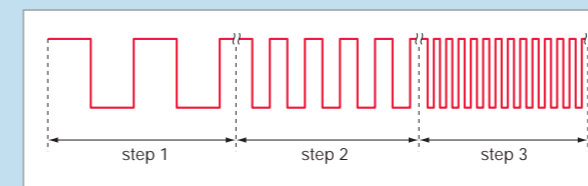
## Function Brings Usability and Efficiency

### Sequence Function

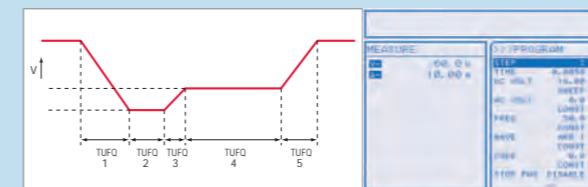
BP series has a built-in sequential signal source. For example, by programming a series of voltage change pattern used in voltage fluctuation test on electrical and electronic components, the test can be done in a single operation since the output changes in order according to the procedure.

- Number of sequences: 1 sequence for each of the CV mode and CC mode
- Number of steps: 1 to 255 (within 1 sequence)
- Step time: 0.1 ms to 999.999s (resolution 0.1 ms)
- Parameters: DC voltage, superimposed AC voltage, frequency and waveforms
- Jump count: 1 to 999, or continuous
- Sequence control: Start, Stops, Hold, Branch

### Various Output Patterns Using Sequence Functions



Ex.1 Relay Operation Test  
(Withstand Power Supply Fluctuation Test)



Ex.2 Vehicle Electrical and Electronic Components Test  
(ISO / DIS7637-2.2 Pulse 4)  
(Simulation of Transient Voltage Drops at Startup)

The dedicated software allows user to edit the complicated pattern easily

In addition to set at the hardware, The application software is available to edit the sequence pattern. This software will included in bundled set.



### Control Software

The software is bundled that allow user to set the basic parameters, to collect the data, to edit the sequence / the arbitrary waveform and to control the sequence. This will support the data analysis and automate of production line.



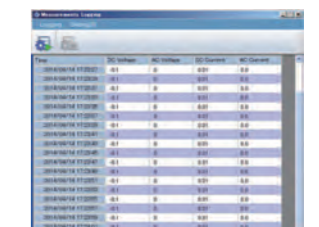
Remote control



Sequence edit



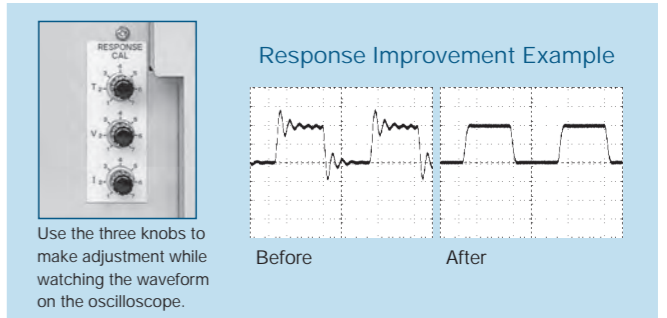
Arbitrary waveform edit



Data logging

### Response Calibration Function

Transient response for load with complicated impedance characteristic such as electromagnetic components with inductance (coil component) or capacitance (capacitor component) differs among loads. BP series has a response calibration function that allows users to individually optimize transient response characteristic in square wave output or sudden output change.



Use the three knobs to make adjustment while watching the waveform on the oscilloscope.

### Voltage Limiter / Current Limiter

BP have the capability to set each of the maximum voltage and current with + and - independently.

When shifting the output voltage range, output voltage limiter is used.

### Additional Functions...

- Voltage / Current output monitor
- Measurement function  
To measure and display the output voltage / current (DC value and p-p value)
- Output on / off function
- External signal input useful for the oscillator and the recorded signal
- External control I / O (output on / off, sequence control and others)
- USB interface
- Store / Recall memories (30 sets)

## Output

※The Adjusted characteristics values are for reference. RL: Resistive load

Model	BP4610	BP4620	BP4630	BP4640	BP4650	BP4660	BP4670	BP4680	BP4690	BP46100	
Maximum output voltage* CV mode											
DC	+ 115 V (set + Vo limit to 117 V and -Vo limit to - 7 V), - 115 V (set + Vo limit to 7 V and - Vo limit to - 117 V)										
	RL = 23 Ω	RL = 12 Ω	RL = 7.7 Ω	RL = 5.7 Ω	RL = 4.6 Ω	RL = 3.8 Ω	RL = 3.3 Ω	RL = 2.9 Ω	RL = 2.6 Ω	RL = 2.3 Ω	
DC to 0.5 kHz	± 60 V										
	RL = 6 Ω	RL = 3 Ω	RL = 2 Ω	RL = 1.5 Ω	RL = 1.2 Ω	RL = 1 Ω	RL = 0.86 Ω	RL = 0.75 Ω	RL = 0.67 Ω	RL = 0.6 Ω	
0.5kHz to 40 kHz	± 60 V										
	RL = 4 Ω	RL = 2 Ω	RL = 1.3 Ω	RL = 1 Ω	RL = 0.8 Ω	RL = 0.67 Ω	RL = 0.57 Ω	RL = 0.5 Ω	RL = 0.44 Ω	RL = 0.4 Ω	
40kHz to 150 kHz	± 50 V										
	RL = 6 Ω	RL = 3 Ω	RL = 2 Ω	RL = 1.5 Ω	RL = 1.2 Ω	RL = 1 Ω	RL = 0.86 Ω	RL = 0.75 Ω	RL = 0.67 Ω	RL = 0.6 Ω	
Maximum output current* CC mode											
DC to 0.5kHz	±10A/RL=6Ω	±20A/RL=3Ω	±30A/RL=2Ω	±40A/RL=1.5Ω	±50A/RL=1.2Ω	±60A/RL=1Ω	±70A/RL=0.86Ω	±80A/RL=0.75Ω	±90A/RL=0.67Ω	±100A/RL=0.6Ω	
0.5 kHz to 30 kHz	±15A/RL=4Ω	±30A/RL=2Ω	±45A/RL=1.3Ω	±60A/RL=1Ω	±75A/RL=0.8Ω	±90A/RL=0.67Ω	±105A/RL=0.57Ω	±120A/RL=0.5Ω	±135A/RL=0.44Ω	±150A/RL=0.4Ω	
30 kHz to 70 kHz	±8.3A/RL=6Ω	±16.6A/RL=3Ω	±24.9A/RL=2Ω	±33.2A/RL=1.5Ω	±41.5A/RL=1.2Ω	±49.8A/RL=1Ω	±58.1A/RL=0.86Ω	±66.4A/RL=0.75Ω	±74.7A/RL=0.67Ω	±83 A/RL=0.6Ω	
Small amplitude frequency characteristics*	CV mode: DC to 200 kHz (amplitude 12 Vp-p, 500 Hz reference), CC mode: DC to 70 kHz (amplitude 12 Vp-p, 500 Hz reference)										
Response calibration function	Response characteristic can be adjusted with knobs on the front panel (Time constant: T, Voltage: V, and Current: I)										
Rise / Fall Time	CV mode : 2.5 μs* (square ± 60 V) CC mode : 4 μs* (square, for the following current)										
	± 10 A	± 20 A	± 30 A	± 40 A	± 50 A	± 60 A	± 70 A	± 80 A	± 90 A	± 100 A	
Output Impedance*	CV mode	7mΩ+1.3μH	3.5mΩ+0.65μH	2.4mΩ+0.43μH	1.8mΩ+0.33μH	1.4mΩ+0.26μH	1.2mΩ+0.22μH	1mΩ+0.19μH	0.9mΩ+0.17μH	0.8mΩ+0.15μH	0.7mΩ+0.13μH
	CC mode	10kΩ/0.45μF	5kΩ/0.90μF	3.3kΩ/1.35μF	2.5kΩ/1.8μF	2kΩ/2.25μF	1.7kΩ/2.7μF	1.5kΩ/3.15μF	1.3kΩ/3.6μF	1.2kΩ/4.05μF	1kΩ/4.5μF
Output Voltage Limiter	+ voltage / - voltage : + 7 V to + 117 V (initial : + 62 V, resolution 0.1 V) / - 117 V to - 7 V (initial : - 62 V, resolution 0.1 V)										
	The difference between the + voltage and the - voltage setting is restricted to 24 V or higher and 124 V or lower.										
Output Current Limiter	+ current	+ 1 A to + 26 A	+ 2 A to + 52 A	+ 3 A to + 78 A	+ 4 A to + 104 A	+ 5 A to + 130 A	+ 6 A to + 156 A	+ 7 A to + 182 A	+ 8 A to + 208 A	+ 9 A to + 234 A	+ 10 A to + 260 A
	- current	- 26A to - 1 A	- 52 A to - 2 A	- 78 A to - 3 A	- 104 A to - 4 A	- 130 A to - 5 A	- 156 A to - 6 A	- 182 A to - 7 A	- 208 A to - 8 A	- 234 A to - 9 A	- 260 A to - 10 A

\*Adjusted characteristics

**Signal Sources** Selectable from among internal source, external signal, and internal source + external signal.

Internal signal source											
CV mode											
DC voltage Setting range	- 115 to + 115 V ( resolution 0.01 V )										
AC voltage	Amplitude setting range	0 Vp-p to 120 Vp-p ( resolution 0.1 Vp-p )									
	Waveform	Sine, Square, Arbitrary (16 types)									
	Frequency setting range	1 Hz to 100 kHz ( resolution 0.1 Hz )									
CC mode											
DC current	Setting range	- 10 A to + 10 A	- 20 A to + 20 A	- 30 A to + 30 A	- 40 A to + 40 A	- 50 A to + 50 A	- 60 A to + 60 A	- 70 A to + 70 A	- 80 A to + 80 A	- 90 A to + 90 A	- 100 A to + 100 A
	Resolution	0.01 A									
AC current	Amplitude setting range	0 to 30 Ap-p	0 to 60 Ap-p	0 to 90 Ap-p	0 to 120 Ap-p	0 to 150 Ap-p	0 to 180 Ap-p	0 to 210 Ap-p	0 to 240 Ap-p	0 to 270 Ap-p	0 to 300 Ap-p
	Resolution	0.1 Ap-p									
	Waveform	Sine, Square, Arbitrary (16 types)									
	Frequency setting range	1 Hz to 100 kHz ( resolution 0.1 Hz )									
External signal input											
Phase	In phase										
Input impedance	10 kΩ										
Non-destructive max. input voltage	± 5 V										
Frequency range	DC to 200 kHz										
Gain	CV mode	100									
	CC mode	10 A / V	20 A / V	30 A / V	40 A / V	50 A / V	60 A / V	70 A / V	80 A / V	90 A / V	100 A / V

## Sequence Function

Number of sequences	1 sequence for each of the CV mode and CC mode									
Number of steps / Step time	1 to 255 (within 1 sequence) / 0.1 ms to 999.9999 s (resolution 0.1 ms) ※Operation within each steps should be constant or linear sweep									
Parameters	CV mode	DC voltage, Superimposed AC voltage, Frequency, Waveform, Step sync output 2 bits								
	CC mode	DC current, Superimposed AC current, Frequency, Waveform, Step sync output 2 bits								
Jump count	1 to 999, or continuous									
Sequence control	Start / Stop	Start the sequence / Stop the sequence.								
	Hold	Maintains settings at that point. The operation resumes at sequence start.								
	Branch	Branches to the specified step.								

## Others

Monitor Output	Output voltage, Output current									
Measurement Functions	DC output voltage, DC output current, AC output voltage, AC output current									
Arbitrary Waveform Memory	16 (1024 words, 16 bit.) Write is performed via the USB interface.									
Store / Recall Memory	the basic settings (operation mode, DC, superimposed AC, output limiters) can be saved to memories No. 1 to No. 30									
Protective Functions	If Output voltage over, Output current over, Internal output loss, Power supply anomaly, Internal overheating and Operation panel anomaly are detected, the protective function works.									
Interface	USB Interface ( USBTMC / USB1.1 )									
Other function	Output ON / OFF function, external control input / output, key lock, beep, reset, self-diagnosis function									
Power Input	Voltage	80 V to 250 V	180 V to 250 V	180 V to 250 V , Single phase 3 wire						
	Frequency	50 Hz / 60 Hz ± 2 Hz								
Power consumption	1.2 kVA max.	2.4 kVA max.	3.6 kVA max.	4.8 kVA max.	6 kVA max.	7.2 kVA max.	8.4 kVA max.	9.6 kVA max.	10.8 kVA max.	12 kVA max.
	Dimensions (W x H x D)(mm)	430 x 176 x 551	430 x 354 x 551	430 x 710 x 686	505 x 1150 x 700			955 x 1150 x 700		
Weight (Approx.)	26 kg	53 kg	97 kg	170 kg	180 kg	290 kg	305 kg	320 kg	335 kg	350 kg
Accessory	Manual, CD-ROM, Ferrite core (for USB cable), Power code set (for BP4610 / BP4620 only)									

\*Note: The contents of this catalog are current as of March 7, 2018

- Product appearance and specifications are subject to change without notice.
- Before purchase, contact us to confirm the latest specifications, price and delivery date.

# NF Corporation

## Head Office

6-3-20 Tsunashima Higashi, Kohoku-ku, Yokohama 223-8508, Japan  
Phone: +81-45-545-8128 Fax: +81-45-545-8187

<http://www.nfcorp.co.jp/english/>