

BRC SERIES
1 to 40kV, 3 to 20kW
High Voltage Power Supplies

DESCRIPTION

UNIPOWER's BRC switching power supplies are notable for low ripple, fast transient response, endurance to repetitive arcing and stable output even in the face of line voltage and load changes. Power is converted using advanced IGBT's switching at frequencies above 20kHz, and controlled using tuned pulse width modulation techniques.

These power supplies are based on reliable and efficient MOSFET and IGBT designs in power switching configurations, which offer many advantages over SRC-based designs, including turn-off in nanoseconds for fault clearing.

BRC provides precise regulation of both voltage and current with smooth automatic crossover between constant voltage and constant current modes as the load or command setting changes. Front panel mode indicator LEDs automatically show which regulating mode (current or voltage) is controlling the supply. Ten-turn locking potentiometer controls for voltage and current are located on the front panel to allow full-range adjustment of voltage or current with 0.1 percent resolution. A remote analog signal input is also available through the rear panel.

For the high voltage section, UNIPOWER provides a variety of insulation methods as appropriate to the application: air-insulation, encapsulation in either rubber or epoxy, or separate oil-filled tanks.

ONE-YEAR WARRANTY

SAFETY COMPLIANCE

UL 601010/ EN601010

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STANDARD MODELS

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	OUTPUT POWER	POLARITY
BRC-1-3000R-STD-K17	1kV	3.0A	3kW	Reversible
BRC-1-10000R-STD-J37	1kV	10.0A	10kW	Reversible
BRC-3-3333N-STD-V37	3kV	3.333A	10kW	Negative
BRC-10-1000R-STD-J37	10kV	1.0A	10kW	Reversible
BRC-15-1111R-STD-J37	15kV	1.111A	16.6kW	Reversible
BRC-1-20000R-STD-V37	1kV	20.0A	20kW	Reversible
BRC-8-2500P-STD-J37	8kV	2.5A	20kW	Positive
BRC-10-2000R-STD-J37	10kV	2.0A	20kW	Reversible

NOTE: Models with pre-defined negative of positive polarity may be specified for the opposite polarity to that shown.

FEATURES

- ◆ Voltage/Current Regulation with Automatic Crossover
- ◆ Arc and Short Circuit Protection
- ◆ Compact & Lightweight
- ◆ Low Energy Storage
- ◆ Air Cooling
- ◆ No Oil Design
- ◆ High frequency switching technology

Contact UNIPOWER to discuss your application and define the right part number for your specific need.

SPECIFICATIONS

Typical at Nominal Line, Full Load and 25°C Unless Otherwise Noted.

BASE MODEL	BRC-1-3000R	BRC-1-10000R	BRC-3-3333N	BRC-10-1000R
Output (HV)				
DC Output Voltage	0-1kV		0-3kV	0-10kV
Output Current	0-3A	0-10A	0-3.333A	0-1A
Max. Output Power	3kW	10kW		
Polarity	Reversible		Negative	Reversible
Ripple(rms)	<0.5% rated voltage at full load			
Voltage Regulation	$\pm 0.05\%$ ($\pm 0.5V$) $\pm 10\%$ line, 0-100% load			
Current Regulation	$\pm 0.05\%$ ($\pm 0.0mA$) $\pm 10\%$ line, 0-100% load			
Stability	0.05%/hour $\pm 0.1\%$, 0.1%/8 hours			
Efficiency	80%			
Input				
Voltage Range	220VAC ($\pm 10\%$)	208VAC ($\pm 10\%$)	480VAC ($\pm 10\%$)	208VAC ($\pm 10\%$)
Current	20A	40A	16A	40A
Phases	1	3		
Line Frequency	50/60Hz			
User Interface				
High Voltage Output	Coaxial Cable with Shielded Ground			
Remote Control	Pluggable Connector			
Mains AC Input	Terminal Block			
Mechanical / Environmental				
Dimensions w x h x d inches (mm)	19 x 8.75 x 18 (483 x 222 x 457)			
Weight	60lbs / 27.3kg			
Operating Temp.	0°C to +40°C			
Storage Temp.	-20°C to +85°C			
Altitude	7500ft (2286m)			
Humidity	5 to 95% RH non-condensing			
Polution Degree	IEC884 - indoor use			
Safety	UL/IEC/EN61010-1			

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SPECIFICATIONS

Typical at Nominal Line, Full Load and 25°C Unless Otherwise Noted.

BASE MODEL	BRC-15-1111R	BRC-1-20000R	BRC-8-2500P	BRC-10-2000R
Output (HV)				
DC Output Voltage	0-15kV	0-1kV	0-8kV	0-10kV
Output Current	0-1.111A	0-20A	0-2.5A	0-2A
Max. Output Power	16.66kW	20kW		
Polarity	Reversible		Positive	Reversible
Ripple(rms)	<0.5% rated voltage at full load			
Voltage Regulation	±0.05% (±0.5V) ±10% line, 0-100% load			
Current Regulation	±0.05% (±0.0mA) ±10% line, 10-100% load			
Stability	0.02%/hour ±0.1%, 0.1%/8 hours after 1/2 hour warmup			
Efficiency	80%			
Input				
Voltage Range	208VAC (±10%)	480VAC (±10%)	208VAC (±10%)	208VAC (±10%)
Current	20A	22A	37A	56A
Phases	3			
Line Frequency	50/60Hz			
User Interface				
High Voltage Output	Coaxial Cable with Shielded Ground			
Remote Control	Pluggable Connector			
Mains AC Input	Terminal Block			
Mechanical / Environmental				
Dimensions w x h x d inches (mm)	19 x 10.5 x 21 (483 x 267 x 533)			
Weight	75lbs / 34kg			
Operating Temp.	0°C to +40°C			
Storage Temp.	-20°C to +85°C			
Altitude	7500ft (2286m)			
Humidity	5 to 95% RH non-condensing			
Polution Degree	IEC884 - indoor use			
Safety	UL/IEC/EN61010-1			

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CONTROL INTERFACE

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BASE MODEL	SINGLE PHASE INPUT	THREE PHASE INPUT
Front Panel Controls (Local)		
Mains Circuit Breaker	single pole	three-pole
HV - ON	Push Button - White or Red	
HV - OFF	Push Button - Green	
Remote/Local Control	Rear Panel	
Voltage Set	Potentiometer - 10 turns	
Current Set	Potentiometer - 10 turns	
Meters & Indicators (Local)		
Voltage (3.5 digit LCD)	Full Scale Voltage $\pm 1-2\%$	
Current (3.5 digit LCD)	Full Scale Current $\pm 1-2\%$	
Power On	GREEN	
Fault	RED	
Positive Polarity	GREEN	
Negative Polarity	GREEN	
Current Regulation Mode	GREEN (above current meter)	
Voltage Regulation Mode	GREEN (above voltage meter)	
Overtoltage Fault	YELLOW (rear panel)	
'Slow' DC Overload Fault	YELLOW (rear panel)	
ARC Rate Counter Fault	YELLOW (rear panel)	
Rail Fault	YELLOW (rear panel)	
Step Start Sequence Fault	YELLOW (rear panel)	

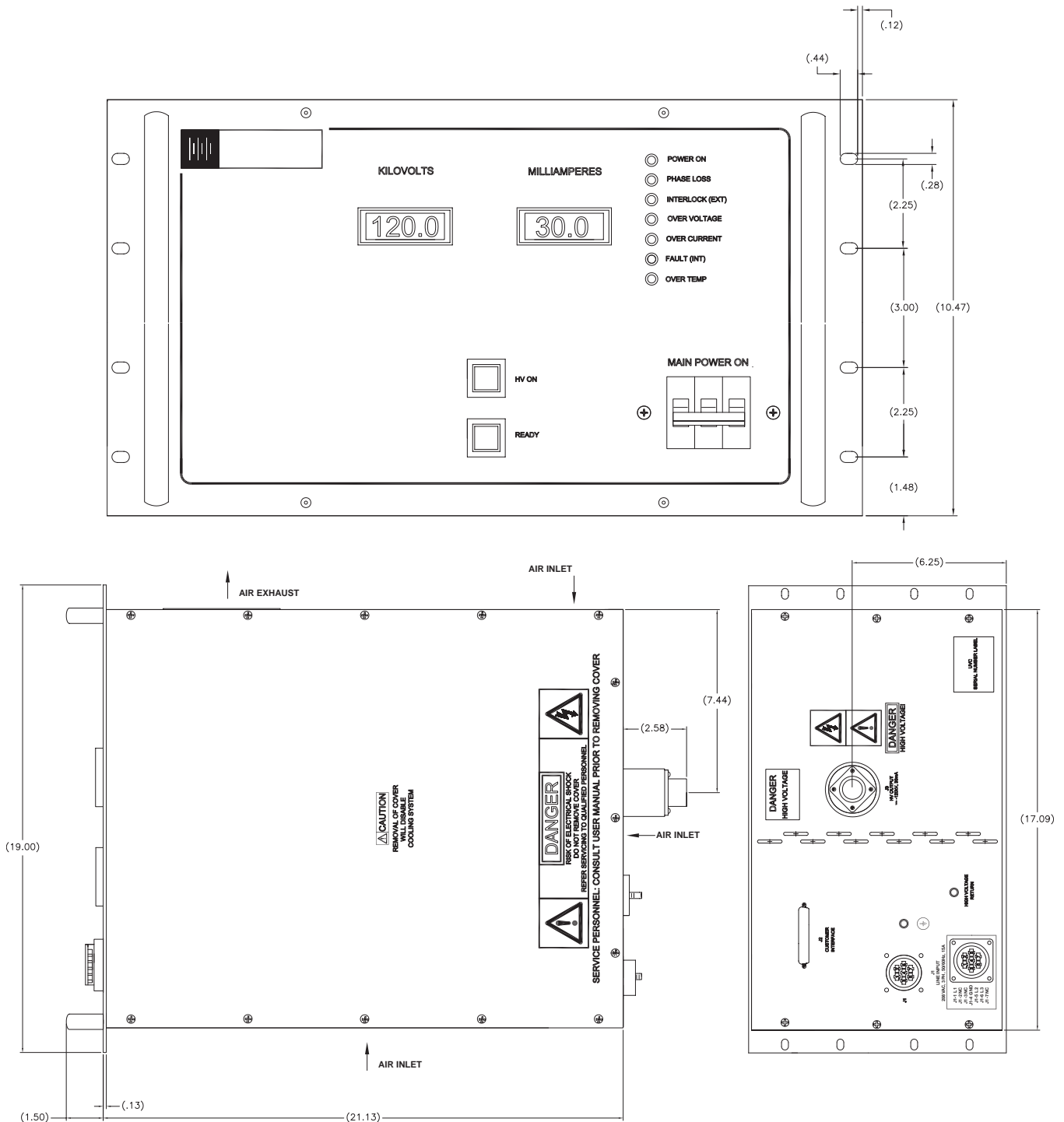
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Remote Connector

Outputs	
Pin 4 - Voltage Monitor (local and remote modes)	This low impedance output should be connected to a high impedance load. A typical load would be a voltmeter or the analog input of a computer interface. A micrometer or millimeter, in series with an appropriate resistor, will function well. It is best if the resistor is adjustable so that the meter calibration may be trimmed. Zero to +10V on this pin represents zero to +5.0kV HV output (0 to +10V = 0 to +5.0kV). The source impedance for this signal is 1k ohm.
Pin 5 - Monitor Reference	Connect to negative terminal of meters or return of other measurement instrument applied to pins 4 and 6.
Pin 6 - Current Monitor (local and remote modes)	This low impedance output should be connected to a high impedance load. A typical load would be a voltmeter or the analog input of a computer interface. A micrometer or millimeter, in series with an appropriate resistor, will function well. It is best if the resistor is adjustable so that the meter calibration may be trimmed. Zero to +10V on this pin represents zero to +800mA HV output (0 to +10V = 0 to +800mA). The source impedance for this signal is 1k ohm.
Pin 13 - Remote HV ON Monitor	This signal is +5VDC when HV is ON and is +0VDC when HV is OFF.
Inputs	
Pin 1 - Voltage Reference	This high impedance input should be connected to a low impedance voltage source (less than or equal to 1k ohms). A typical input would be the analog output of a computer interface. Zero volts applied here is equal to a zero volt HV output, and +10V is equal to a +5.0kV HV output (0 to +10V = 0 to +5.0kV).
Pin 2 - Reference Common	Connect to the return of the analog signal (or other voltage source) applied to pin 1.
Pin 3 - Current Reference	This high impedance input should be connected to a low impedance voltage source (less than or equal to 1k ohms). A typical input would be the analog output of a computer interface. Zero volts applied here is equal to a zero ampere HV output, and +10V is equal to a +800mA HV output (0 to +10V = 0 to +800mA).
Pin 7, 8 - HV OFF Control (local and remote modes)	Connect to a normally closed (NC) set of isolated ("voltage free" or "dry") switch contacts. Operation of these contacts must be momentary (i.e. the contacts stay closed until the switch is operated, at which time they open briefly, and the contacts automatically return to the closed state after an operation).
Pin 9, 10 - External Interlock (local and remote modes)	Short these pins together to complete interlock loop.
Pin 11, 12- HV ON Control (local and remote modes)	Connect to a normally open (NO) set of isolated switch contacts. Operation of these contacts should be momentary, but an alternate action switch is acceptable.
Pin 14 - HV ON/OFF & Inhibit Common (local and remote modes)	Connect to return for Remote HV ON Monitor and Inhibit Command signals.
Pin 15 - Inhibit Command (local and remote modes)	This input is used to prevent high voltage from being turned on in any mode of operation. By maintaining +5VDC on this pin (TTL high state), high voltage is prevented from being turned on by the front panel pushbutton or the User Interface, and will terminate high voltage if in the ON state.

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MECHANICAL - 20kW



NOTE: REAR PANEL LAYOUT SHOWN IS TYPICAL AND WILL VARY FROM MODEL TO MODEL DEPENDENT ON OPTIONS INCLUDED.