

# BRC SERIES

## 20kW High Voltage Power Supply



### Description

UNIPOWER's line of 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.

UVC switchers provide precise regulation of both voltage and current with smooth automatic crossover between constant voltage and constant modes as the load or command setting change. 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. 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.

### Features

- Automatic Voltage and Current Regulation
- Arc and Short Circuit Protection
- Compact, Lightweight
- Low Energy Storage
- Air Cooled (Fans on Chassis Side)

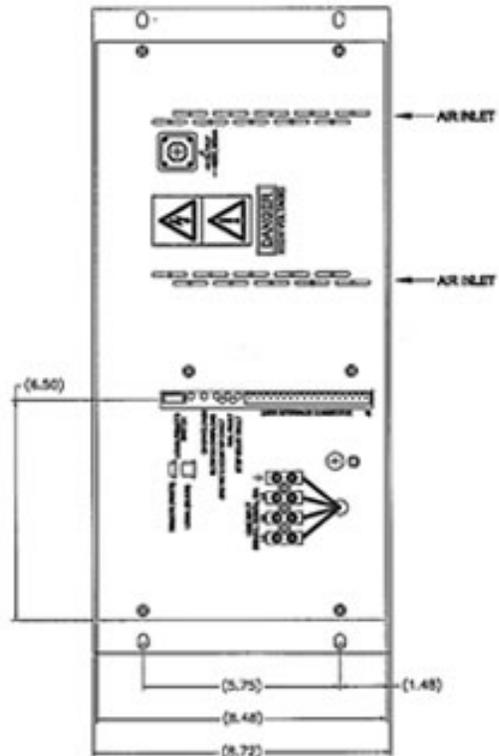
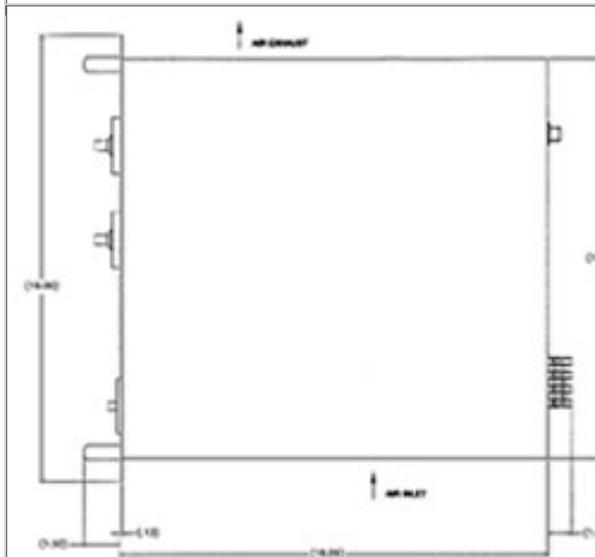
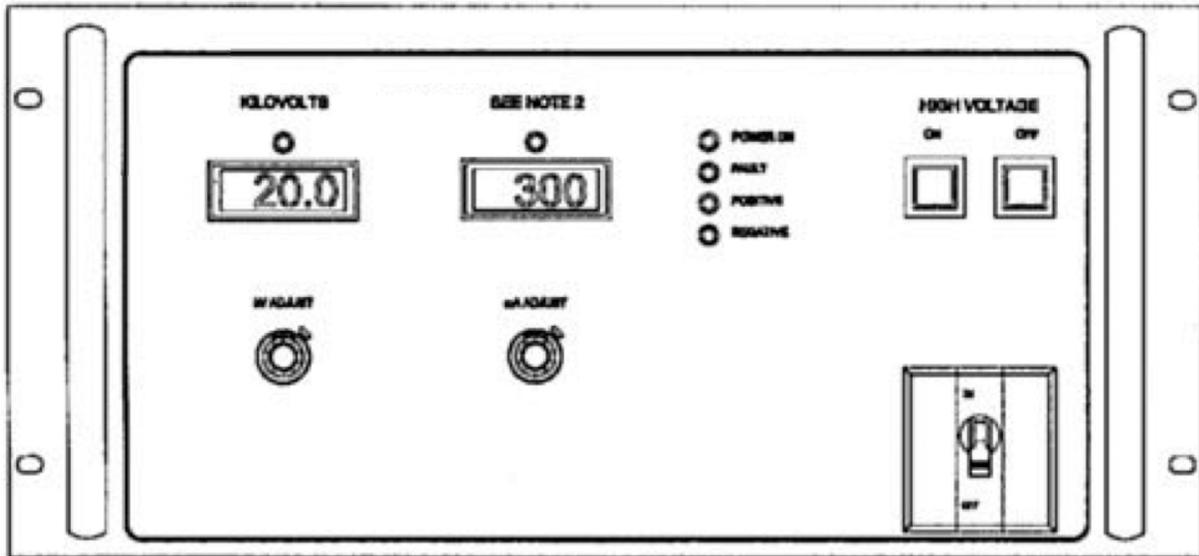
## Electrical Specifications

<b>Input</b>	
Voltage	240V $\pm$ 10%
Phase	Three
Frequency	50/60 Hertz
Current	60 Amps
Power	20KW
<b>Output</b>	
Voltage	0 - 10,000 Volts
Current	0 - 2.00 Amperes
Regulation	
Voltage	0.05% For $\pm$ 10% Line Changes and 0-100% Load Changes within the specified range.
Ripple	0.5% RMS of Rated Voltage at Full Load
Stability	0.02% Per Hour .05% Per 8 Hours after warm up
Polarity	Fixed Positive Negative Low End Grounded
Efficiency	Greater than 85%
<b>LED Indicators (Front Panel)</b>	
Power On	Indicates AC power is active
Fault	Indicates a power supply fault is present
Positive	Output polarity is positive
Negative	Output polarity is negative
Kilovolts	Indicates when unit is in voltage regulation mode
Amperes	Indicates when unit is in current regulation mode

## Mechanical Specifications

Chassis Dimensions	
Panel	19" W x 10-1/2" H
Chassis	21" Deep
Weight	60Lbs.

**10kw**



## Pin Out

<b>Control – “Local”</b>	
Main Circuit Breaker - 63A	
Switches	
High Voltage	ON
High Voltage	OFF
Remote	Local - Rear Panel
Meters	
Digital	3.5 Digits LCD Standard
Voltage	±2% Accuracy "10.00" KV
Current	±2% Accuracy "2.00" Amperes
Indicators	High Voltage ON
	Standby
	Fault
	Voltage Regulation Mode
	Current Regulation Mode
<b>Control – “Remote”</b>	
Reference Inputs	

<b>User Interface Rear Panel</b>		
	PIN	
	CR139	Overvoltage fault indicator (yellow)
	CR135	'Slow' DC overload fault indicator (yellow)
	CR133	ARC Rate Counter Fault Indicator (yellow)
	CR131	Rail Fault Indicator (yellow)
	CR137	Step Start Sequence Fault Indicator (yellow)

## Pin Assignments – J4 (HV Regulator 9120010)

*Note: Functions that are underlined are operational in both Local and Remote modes. In addition, please note that the local HV OFF switch is operational in both Local and Remote modes for safety reasons.*

Pin #	Function (Input or Output)
1.	Voltage Reference (Input): 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).
2.	Common Pin for References (Input): Connect to the return of the analog signal (or other voltage source) applied to pin 1.
3.	Current Reference (Input): 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).
4.	<u>Analog Voltage Monitor (Output):</u> 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.
5.	<u>Common Pin for Analog Monitors (Output):</u> Connect to negative terminal of meters or return of other measurement instrument applied to pins 4 and 6.
6.	<u>Analog Current Monitor (Output):</u> 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.
7. 8.	<u>High Voltage OFF Control (Input):</u> 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).
9,10.	<u>External Interlock (Input):</u>

	Short these pins together to complete interlock loop.
11,12.	<u>High Voltage ON Control (Input):</u> 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.
13.	<u>Remote HV ON Monitor (Output):</u> This signal is +5VDC when HV is ON and is +0VDC when HV is OFF.
14.	<u>Common Pin for High Voltage ON Control and Inhibit Command (Input):</u> Connect to return for Remote HV ON Monitor and Inhibit Command signals.
15.	<u>Inhibit Command (Input):</u> 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.