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BRC SERIES

16.66kW High Voltage Power Supply

Description

Universal Voltronics' 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 charges. 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, Universal Voltronics 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

- Oil-free design
- High freqency switching technology

Please contact the UVC Sales Office for further information regarding our Ebeam family of power supplies.

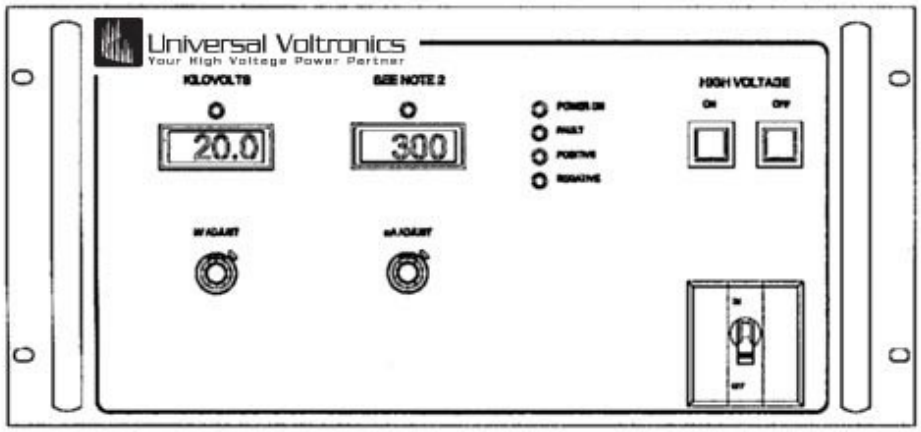
Electrical Specifications

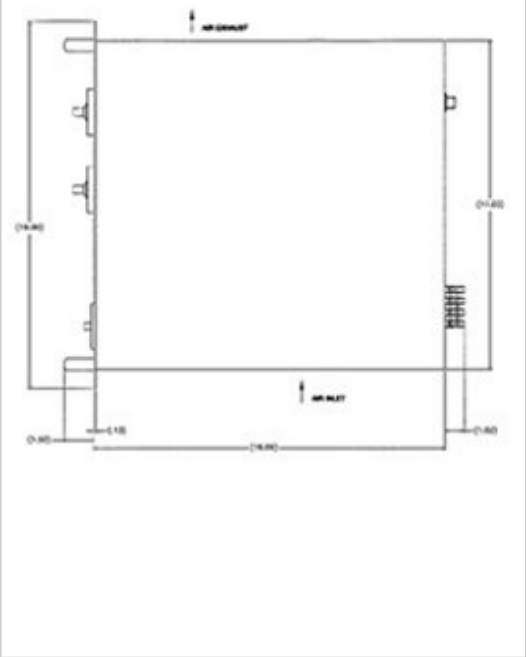
Input	
Voltage	208V± (187-229V)
Phase	Three
Frequency	50/60 Hertz

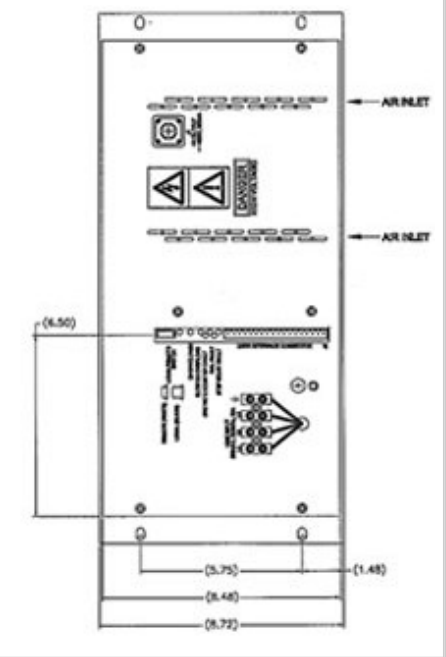
Output	
Voltage	0 - 15.0kV DC
Current	0 - 1.111A DC
Polarity	Positive or Negative (User to specify)
Regulation	±0.1% (± 15.0V)
Ripple	0.5% rms (75V rms) max.

Mechanical Specifications

Chassis Dimensions	
Panel	19" W x 7" H
Chassis	21" Deep (not including approx. 2" for connections)
Weight	100Lbs. (including packaging)
HV Output	Fixed, rear panel
Control Interface	DB-25 female connector, rear panel (J4)
Power Input	3-position terminal strip, rear panel
Ground Connection	1/4 - 20 stud, rear panel
Fusing	
Regulator 9120010 (F1)	Bussmann GDC-100mA (250V AC, 0.1A, time delay)
Regulator 9120010 (F3)	Bussmann GDC-500mA (250V AC, 0.5A, time delay)
Inverter 853189539P (F1, 2)	Bussmann GDB-4A (250V AC, 4A, fast acting)
10kw	



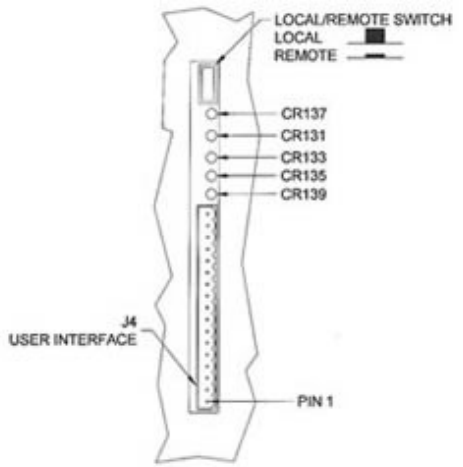




Pin Out

Control – “Local”	
Main Circuit Breaker	
Switches	
High Voltage	ON PB
High Voltage	OFF PB
kV	Adjust knob
A	Adjust knob
Meters	3.5 Digits LCD
	Voltage 15.0kV
	Current 1.111A
Control – “Remote”	
Reference Inputs	
Voltage	0 to +10V = 0 to -15.0kV DC
Current	0 to +10V = 0 to -1.111A DC
Monitor Outputs	
Voltage	0 to -15.0kV DC = 0 to + 10V DC
Current	0 to -1.111A DC = 0 to + 10V DC
Digital Signal Inputs	
HV ON	Momentary contact closure
HV OFF	Momentary contact opening
Digital Signal Outputs	
HV ON	TTL High

User Interface Rear Panel		
	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.	Analog Voltage Monitor (Output): 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.	Common Pin for Analog Monitors (Output): Connect to negative terminal of meters or return of other measurement instrument applied to pins 4 and 6.
6.	Analog Current Monitor (Output): 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.	High Voltage OFF Control (Input): 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.	External Interlock (Input): Short these pins together to complete interlock loop.
11,12.	High Voltage ON Control (Input): 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.	Remote HV ON Monitor (Output): This signal is +5VDC when HV is ON and is +0VDC when HV is OFF.
14.	Common Pin for High Voltage ON Control and Inhibit Command (Input): Connect to return for Remote HV ON Monitor and Inhibit Command signals.
15.	Inhibit Command (Input): 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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