

ULTRAVOLT 10HVA – 20HVA SERIES

PRECISION HIGH VOLTAGE AMPLIFIER



The UltraVolt® 10HVA – 20HVA series of DC-to-DC high voltage power supplies operates a precision filter / divider and linear HV switch to produce a high voltage amplifier (HVA). These modules provide a high-resolution, high voltage DC to full scale waveform capability greater than 500 Hz output. 10/15/20 kV HVA modules are optimized for bias applications while providing excellent line regulation, load regulation, dynamic response, and stability. The HVA series can both source and sink current operating linearly through 0 V with low ripple and noise over the entire output range.

PRODUCT HIGHLIGHTS

- Bipolar models available at 0 to 10 kV, 15 kV, 20 kV
- Unipolar models available at 0 to 15 kV and 20 kV
- Operates in DC, reversible, and amplifier modes
- Fast slew rate and high bandwidth at an excellent value
- Can both source and sink current
- PPM level line and load regulation
- 50 ppm temperature coefficient (25 ppm optional)
- Reduced ripple option available
- Differential precision 0 to 10 VDC control input
- Precision voltage and current monitors
- RoHS Compliant

TYPICAL APPLICATIONS

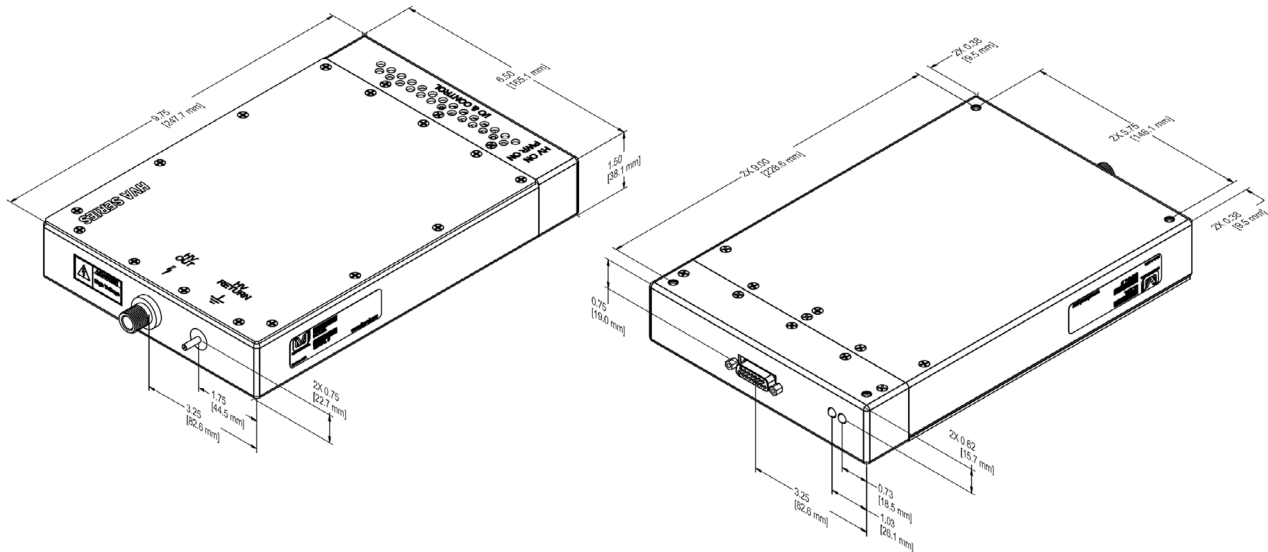
- Drivers
 - Electrohydrodynamics
 - Electrostatic chuck
 - Pockels cells
 - Laser and electro-optic modulation
 - Electrophoresis
- Amplifiers
 - Ion beam and electron beam devices such as mass spectrometry, and electron microscopes as well as electrostatic deflection/focusing, flocking, coating, electrospinning, precipitation, and electrocoalescence

ELECTRICAL SPECIFICATIONS

Parameter	Conditions	Models					Units
Input		All Types					
Voltage Range	Full Power	24 VDC \pm 10%					VDC
Current	Standby / Disable	<70 unipolar, <105 bipolar					mA
Current	Full Load, Max Eout	750	Bipolar-1 W=850/1.5 W=900 Unipolar-1 W=650/1.5 W=700		Bipolar-1 W=950/2 W=1025 Unipolar-1 W=750/2 W=825		mA
Current	No Load, Max Eout	675	Bipolar-1 W=775/1.5 W=825 Unipolar-1 W=575/1.5 W=625		Bipolar-1 W=875/2 W=950 Unipolar-1 W=675/2 W=750		mA
Output ¹		\pm 10 kV	15 kV/ \pm 15 kV		20 kV/ \pm 20 kV		
Power	Nominal Input, Max Eout	1	1	1.5	1	2	W
Current	Iout Entire Voltage Range	100	66	100	50	100	μ A
Ripple	Full Load, Max Eout	0.05	0.05	0.05	0.05	0.05	%V pp
Ripple with -F Option	Full Load, Max Eout	0.0125	0.0125	0.0125	0.0125	0.0125	%V pp
Voltage Monitor	Normal Operating Conditions	0 to 10 \pm 0.5%					VDC
Current Monitor	Normal Operating Conditions	0 to 10 \pm 1%					VDC
Line Regulation	Vin Min to Vin Max, Max Eout	<0.01					%
Load Regulation	No Load to Full Load, Max Eout	<0.01					%
Programming and Controls		All Types					
Input Impedance	Normal Operating Conditions	10					M Ω
Adjust Voltage	Differential	0 to +10					VDC
HV ON/OFF (Enable/Disable)		0 to +0.8 V Disable, +2.5 to +10 Enable (Default = Disable)					VDC
Reference Voltage		+10.00 \pm 0.05%					VDC
Max Source Current		1					mA
Environmental		All Types					
Operating	Full Load, Max Eout, Case Temp.	+10 to +45					$^{\circ}$ C
Temperature Coefficient	Over the Specified Temperature	\pm 50 ppm or \pm 25 ppm (Optional)					ppm/ $^{\circ}$ C
Storage	Non-Operating, Case Temp.	-40 to +100					$^{\circ}$ C
Humidity	All Conditions, Standard Package	0 to 95% non-condensing					-
Altitude	Standard Package, All Conditions	Sea Level through 10,000					ft
Shock	Mil-Std-810, Method 516, Proc. 4	20					Gs
Vibration	Mil-Std-810, Method 514, Fig. 514-3	10					Gs

¹ Units listed without polarity can be ordered as positive (+) or negative (-). Units listed as (\pm) are bipolar.

MECHANICAL SPECIFICATIONS



Construction	
Standard Case	Aluminum (Anodized per MIL-A-8625 Type II)
Finish	Blue Anodized
Size	95.06 in ³ (1557.8 cm ³)
Tolerance	Overall: ±0.030 in (1.27 mm)
	Mounting Hole Location: ±0.025 in (0.64 mm)
Encapsulation	Silicone-based RTV (contact factory for other options)

INTERFACE

Connections

D-Sub	15-Pin, Female
HV Connector	LGH1Li
HV Return	#6-32 x 0.437 Long

¹ Requires mating cable CA-25KV-1000 to operate. (Sold Separately)

HVA Input Connector Pinout Functions

Pin	Description	Function
1	Reference Voltage	+10.00 V precision reference
2	Voltage Programming -	0 to +10 V or 0 to -10 V to program full output voltage, depending on polarity. Programming input is differential between pins 2 and 3.
3	Voltage Programming +	
4	Voltage Monitor	0 to ±10 V represents 0 to ± full output voltage
5	N/C	No connection
6	Signal Ground	Reference all control signals here
7	Input Power	+24 V Input Power
8	Input Power	
9	Power Ground	Input power return
10	Power Ground	
11	Enable	TTL high to enable, low to disable, default is OFF
12	Current Monitor	0 to ±10 V represents 0 to ± full output current
13	Current Limit Adjust	0 to +10 V sets current limit from 0 to full rated output current
14	N/C	No connection
15	Signal Ground	Reference all control signals here

ORDERING INFORMATION

Type	0 to 10,000 VDC Output	10HVA
	0 to 15,000 VDC Output	15HVA
	0 to 20,000 VDC Output	20HVA
Input	24 VDC Nominal	24
Polarity	Positive Output	-P
	Negative Output	-N
	Bipolar Output	-BP
Power	1 Watt Output	1
	1.5 Watt Output @ 15kV Only	1.5
	2 Watt Output @ 20kV Only	2
Option	Ripple Stripper® Output Filter	-F
	25 ppm temperature coefficient	-25PPM
Connections	LGH1Li	Standard
	Flying Lead for HV Output	-W
	Shielded Flying Lead for HV Output	WS

