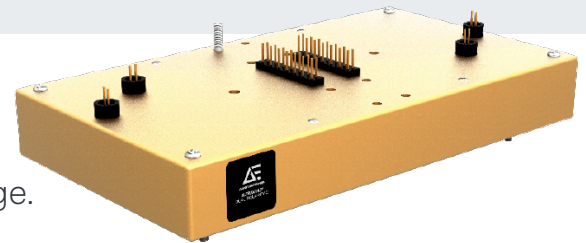


ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

DUAL OUTPUT HIGH VOLTAGE, HIGH POWER CONVERTERS

The UltraVolt® Dual Polarity C integrates two high power DC-to-DC converters of opposite polarity into a single package.



PRODUCT HIGHLIGHTS

- Regulated high voltage outputs ranging from ± 125 to ± 6 kV VDC maximum
- Positive and negative unipolar outputs, independently controllable
- Choice of 120 W (2 x 60 W) or 250 W (2 x 125 W) total output power
- 24 VDC input
- Output ripple performance $< 1.0\%$
- Controlled high voltage overshoot enhances longevity of external load components
- Temperature coefficient < 50 ppm/ $^{\circ}\text{C}$
- Ease of installation with chassis or PCB-mount options
- Simplified integration with available 0 to 5 VDC or 0 to 10 VDC interface
- Reliable modular design
- Factory-configured performance, control and integration options
- UL/cUL recognized, IEC-60950-1, CE mark (LVD and RoHS)

TYPICAL APPLICATIONS

- High voltage power rails for Amplifiers and Piezoelectric devices
- High voltage capacitor charging
- Pulse generators and pulsed power
- Ultrasound
- Lasers and opto-electronics

AT A GLANCE

Maximum Output Voltage

125, 250, 500, 1 k, 2 k, 4 k, or 6 k VDC

Maximum Output Power

250 W

Type

Dual Output

Ripple

$< 1.0\%$

Control

Analog

Temperature Coefficient

50 ppm/ $^{\circ}\text{C}$

ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

ELECTRICAL SPECIFICATIONS

Model ¹		1/8C Series		1/4C Series	
High Voltage Output Range (Adjustable Regulated, Positive Polarity Unit)		0 to +125 VDC		0 to +250 VDC	
High Voltage Output Range (Adjustable Regulated, Negative Polarity Unit)		0 to -125 VDC		0 to -250 VDC	
High Voltage Outputs		Dual Unipolar		Dual Unipolar	
Input Voltage (VDC, Nominal)		24 VDC		24 VDC	
Power Output (Total Watts, Nominal)		120 W	250 W	120 W	250 W
DC Input (Separately for Positive Polarity Unit and Negative Polarity Unit)					
Vin Range (Input Voltage)	VDC (positive polarity only)	23 to 30		23 to 30	
Vin (Nominal)	VDC	24		24	
Iin (Input Current, Nominal)	A @ 100% HVout, 100% LOAD (per unit)	< 3.3	< 6.9	< 3.3	< 6.9
	A @ 100% HVout, 0% LOAD (per unit)	< 0.5	< 0.8	< 0.5	< 0.8
	A @ disable/standby state (per unit)	< 0.075		< 0.075	
DC Output (Separately for Positive Polarity Unit and Negative Polarity Unit)					
HVout (Output Voltage)	VDC (positive polarity unit = +HVout)	0 to +125		0 to +250	
HVout (Output Voltage)	VDC (negative polarity unit = -HVout)	0 to -125		0 to -250	
Iout (Output Current, Per Unit)	mA (max) @ 0 to 100% HVout, Vin (nominal)	480	1000	240	500
Pout (Output Power, Per Unit)	Watts (max)	60	125	60	125
Ripple ^{2,3}	%	< 1.0		< 1.0	
	ppm	< 10,000		< 10,000	
	Vpp	< 1.3		< 2.5	

Model ¹		1/2C Series		1C Series	
High Voltage Output Range (Adjustable Regulated, Positive Polarity Unit)		0 to +500 VDC		0 to +1000 VDC	
High Voltage Output Range (Adjustable Regulated, Negative Polarity Unit)		0 to -500 VDC		0 to -1000 VDC	
High Voltage Outputs		Dual Unipolar		Dual Unipolar	
Input Voltage (VDC, Nominal)		24 VDC		24 VDC	
Power Output (Total Watts, Nominal)		120 W	250 W	120 W	250 W
DC Input (Separately for Positive Polarity Unit and Negative Polarity Unit)					
Vin Range (Input Voltage)	VDC (positive polarity only)	23 to 30		23 to 30	
Vin (Nominal)	VDC	24		24	
Iin (Input Current, Nominal)	A @ 100% HVout, 100% LOAD (per unit)	< 3.3	< 6.9	< 3.3	< 6.9
	A @ 100% HVout, 0% LOAD (per unit)	< 0.5	< 0.8	< 0.5	< 0.8
	A @ disable/standby state (per unit)	< 0.075		< 0.075	
DC Output (Separately for Positive Polarity Unit and Negative Polarity Unit)					
HVout (Output Voltage)	VDC (positive polarity unit = +HVout)	0 to +500		0 to +1000	
HVout (Output Voltage)	VDC (negative polarity unit = -HVout)	0 to -500		0 to -1000	
Iout (Output Current, Per Unit)	mA (max) @ 0 to 100% HVout, Vin (nominal)	120	250	60	125
Pout (Output Power, Per Unit)	Watts (max)	60	125	60	125
Ripple ^{2,3}	%	< 1.0		< 1.0	
	ppm	< 10,000		< 10,000	
	Vpp	< 5.0		< 10	

ELECTRICAL SPECIFICATIONS (CONTINUED)

Model ¹		2C Series		4C Series	
High Voltage Output Range (Adjustable Regulated, Positive Polarity Unit)		0 to +2000 VDC		0 to +4000 VDC	
High Voltage Output Range (Adjustable Regulated, Negative Polarity Unit)		0 to -2000 VDC		0 to -4000 VDC	
High Voltage Outputs		Dual Unipolar		Dual Unipolar	
Input Voltage (VDC, Nominal)		24 VDC		24 VDC	
Power Output (Total Watts, Nominal)		120 W	250 W	120 W	250 W
DC Input (Separately for Positive Polarity Unit or Negative Polarity Unit)					
Vin (Input Voltage) Range	VDC (positive polarity only)	23 to 30		23 to 30	
Vin (Nominal)	VDC	24		24	
Iin (Input Current, Nominal)	A @ 100% HVout, 100% LOAD (per unit)	< 3.3	< 6.9	< 3.3	< 6.9
	A @ 100% HVout, 0% LOAD (per unit)	< 0.5	< 0.8	< 0.5	< 0.8
	A @ disable/standby state (per unit)	< 0.075		< 0.075	
DC Output (Separately for Positive Polarity Unit or Negative Polarity Unit)					
HVout (Output Voltage)	VDC (positive polarity unit = +HVout)	0 to +2000		0 to +4000	
HVout (Output Voltage)	VDC (negative polarity unit = -HVout)	0 to -2000		0 to -4000	
Iout (Output Current, Per Unit)	mA (max) @ 0 to 100% HVout, Vin (nominal)	30	63	15	31
Pout (Output Power, Per Unit)	Watts (max)	60	125	60	125
Ripple ^{2,3}	%	< 1.0		< 1.0	
	ppm	< 10,000		< 10,000	
	Vpp	< 20		< 40	

Model ¹		6C Series	
High Voltage Output Range (Adjustable Regulated, Positive Polarity Unit)		0 to +6000 VDC	
High Voltage Output Range (Adjustable Regulated, Negative Polarity Unit)		0 to -6000 VDC	
High Voltage Outputs		Dual Unipolar	
Input Voltage (VDC, Nominal)		24 VDC	
Power Output (Total Watts, Nominal)		120 W	250 W
DC Input (Separately for Positive Polarity Unit or Negative Polarity Unit)			
Vin (Input Voltage) Range	VDC (positive polarity only)	23 to 30	
Vin (Nominal)	VDC	24	
Iin (Input Current, Nominal)	A @ 100% HVout, 100% LOAD (per unit)	< 3.3	< 6.9
	A @ 100% HVout, 0% LOAD (per unit)	< 0.5	< 0.8
	A @ disable/standby state (per unit)	< 0.075	
DC Output (Separately for Positive Polarity Unit or Negative Polarity Unit)			
HVout (Output Voltage)	VDC (positive polarity unit = +HVout)	0 to +6000	
HVout (Output Voltage)	VDC (negative polarity unit = -HVout)	0 to -6000	
Iout (Output Current, Per Unit)	mA (max) @ 0 to 100% HVout, Vin (nominal)	10	21
Pout (Output Power, Per Unit)	Watts (max)	60	125
Ripple ^{2,3}	%	< 1.0	
	ppm	<10,000	
	Vpp	< 60	

ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

ELECTRICAL SPECIFICATIONS (CONTINUED)

Stability and Regulation	
Stability	0.01% (100 ppm) @ 100% HVout (after 30 min warmup interval)
	0.02% (200 ppm) @ 100% HVout (per 8 h interval)
Line Regulation	0.01% (100 ppm) @ 100% HVout, 100% Pout, Vin (nominal)
Static Load Regulation	0.01% (100 ppm) @ 100% HVout, 0 to 100% LOAD
Temperature Coefficient	50 ppm/°C (over operating temperature range)
Power-On Rise Time	Application dependent (See Rise Time / Capacitor Charging equations)

Environmental	
Operating Temperature Range	-40 to 65°C (-40 to 149°F) case bottom temperature
Storage	-55 to 105°C (-67 to 222°F) case temperature
Humidity	0 to 95% RH, non-condensing
Altitude	Sea level to 3000 m (10,000 ft)

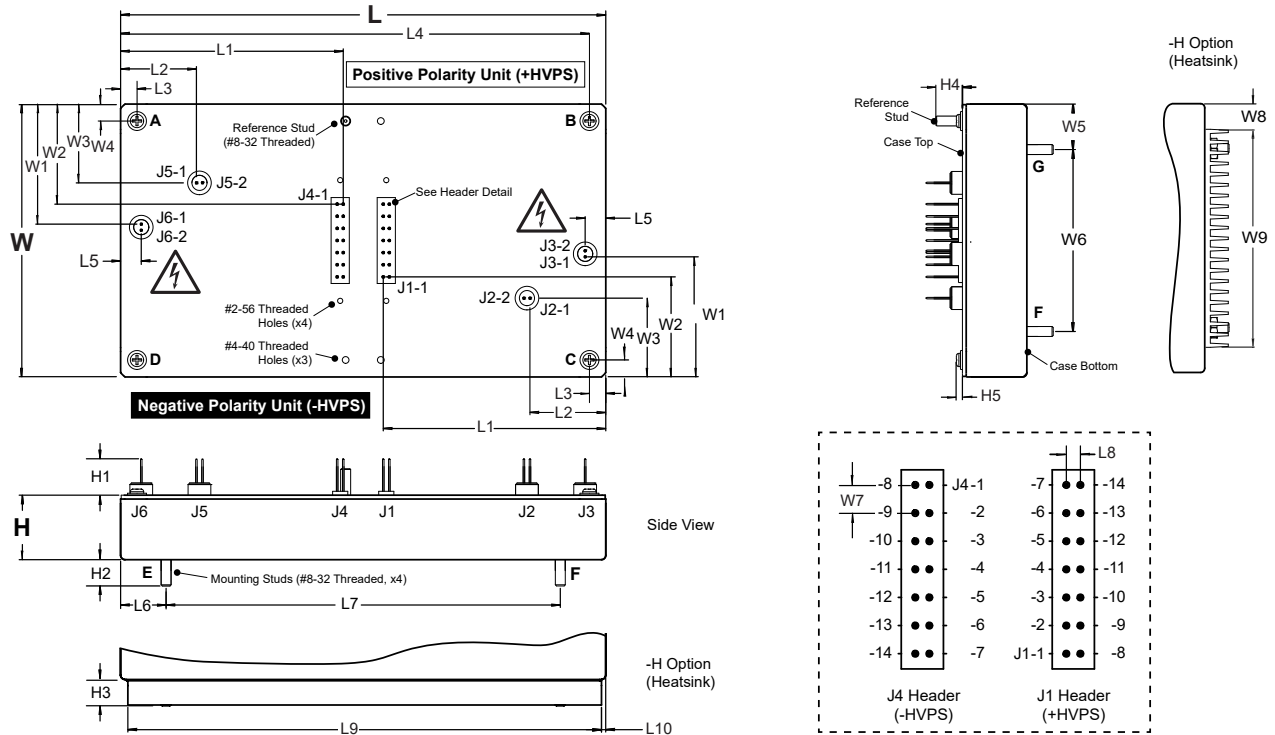
Regulatory	
Certifications	UL/cUL recognized, IEC-60950-1, CE Mark (LVD and RoHS)

¹ Standard product specifications shown unless noted. Custom configurations are available.

² Nominal ripple measured @ 100% HVout, 100% LOAD into $C_x > 0.5\mu\text{F}$. Valid for 10 to 100% HVout range.

³ V_{pp} = VDC peak-to-peak @ 100% HVout, % = Percent @ 100% HVout (V_{pp}), ppm = parts per million @ 100% HVout (V_{pp})

MECHANICAL SPECIFICATIONS



Volumes and Weights	All Models	
	cm ³	in ³
Volume (Module Body Only)	635	38.7
Volume (Module Body, plus -H Option Height)	890	54.3
	g	oz
Weight (Standard Configuration)	1140	40.2
Weight (with -H Option)	1460	51.5

Construction	
Standard Case	Aluminum (Anodized per MIL-A-8625 Type II)
Heatsink	Aluminum (Anodized, -H Option)
PCB Standoffs	Zinc-plated steel (-Z11 Option)
Labels	Static-dissipative polyester
Cooling	Natural convection and conduction
Encapsulation	Silicone-based RTV (contact factory for other options)
Pins	Gold-plated bronze

ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

MECHANICAL SPECIFICATIONS (CONTINUED)

Dimensions		All Models	
Key	Description ^{1,2,3,4}	mm	in
L	Overall Length	203.2	8.00
L1	Case Exterior to J1-1 / J4-1	93.0	3.66
L2	Case Exterior to J5-1 / J2-1	32.1	1.26
L3	Case Exterior to Centerline Screw A / D	7.1	0.28
L4	Case Exterior to Centerline Screw B / C	196.1	7.72
L5	Case Exterior to J3-1 / J6-1	9.0	0.35
L6	Case Exterior to Mounting Stud E	19.0	0.75
L7	Centerline, Mounting Stud E to F	165.0	6.50
L8	Pin-to-Pin Centerline Length of J1 and J4 Header (typical)	2.6	0.10
L9	Heatsink (Overall Length, -H Option)	198.0	7.80
L10	Case Exterior to Heatsink Edge (-H Option)	2.6	0.10
W	Overall Width	114.3	4.5
W1	Case Exterior to J6-1 / J3-1	50.1	1.97
W2	Case Exterior to J4-1 / J1-1	42.1	1.65
W3	Case Exterior to J5-1 / J2-1	33.0	1.30
W4	Case Exterior to Screw A / D	7.1	0.28
W5	Case Exterior to Mounting Stud G / H	19.0	0.75
W6	Centerline, Mounting Stud E to F / (G to H)	76.2	3.00
W7	Pin-to-Pin Centerline Width of J1 and J4 Header (typical)	5.1	0.20
W8	Case Exterior to Heatsink Edge (-H Option)	11.0	0.43
W9	Heatsink (Overall Width, -H Option)	93.0	3.66
H	Case Height (Case Bottom to Top, Max)	27.4	1.08
H1	Case Top to J6 Header Tip (typical)	15.1	0.59
H2	Length of Mounting Stud E, F, G, H (typical)	11.1	0.43
H3	Heatsink Height (-H Option)	10.2	0.40
H4	Length of Reference Stud	11.0	0.43
H5	Case Top of Screw A / B / C / D Top (typical)	2.6	0.10

¹ Approximate nominal dimensions and weights.

² Header pin-to-pin tolerances are ± 0.76 mm (± 0.015 in).

³ Mounting Stud H is not shown.

⁴ Refer to outline drawings and 3D models for detailed information.

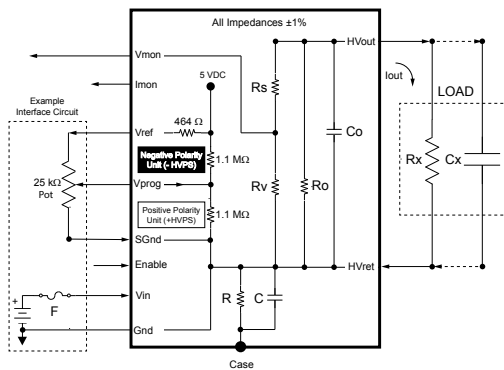
INTERFACE

Two Standard Interfaces on the Dual Polarity C series permit voltage and monitoring of both output voltage and current using analog DC signals whose range and polarity vary by model. Schematics and control parameters apply to both the positive polarity (+HVPS) and negative polarity (-HVPS) interfaces.

Standard Interfaces					-I5 and -I10 Interfaces (Optional)				
Pin (+HVPS)	Pin (-HVPS)	Label	Type	Description	Pin (+HVPS)	Pin (-HVPS)	Label	Type	Description
J1-1	J4-1	Gnd	Ground	DC Input Power Ground	J1-1	J4-1	Gnd	Ground	DC Input Power Ground
J1-2	J4-2	Vin	Input	DC Input Power	J1-2	J4-2	Vin	Input	DC Input Power
J1-3	J4-3	Imon	Output	Monitor HVout Current Level	J1-3	J4-3	Imon	Output	Monitor HVout Current Level ^{1,6}
J1-4	J4-4	Enable	Input	Enable HVout ¹	J1-4	J4-4	Enable	Input	Enable HVout ²
J1-5	J4-5	SGnd	Ground	Signal Ground	J1-5	J4-5	SGnd	Ground	Signal Ground
J1-6	J4-6	Vprog	Input	Set HVout Voltage Level	J1-6	J4-6	Vprog	Input	Set HVout Voltage Level
J1-7	J4-7	Vref	Output	Control Signal Reference ²	J1-7	J4-7	Vref	Output	Control Reference Signal ^{3,4}
J1-8	J4-8	Gnd	Ground	DC Input Power Ground	J1-8	J4-8	Gnd	Ground	DC Input Power Ground
J1-9	J4-9	Vin	Input	DC Input Power	J1-9	J4-9	Vin	Input	DC Input Power
J1-10	J4-10	N/C		No Connection	J1-10	J4-10	N/C		No Connection
J1-11	J4-11	N/C		No Connection	J1-11	J4-11	Imode	Output	Current Mode Indicator ⁵
J1-12	J4-12	N/C		No Connection	J1-12	J4-12	Vmode	Output	Voltage Mode Indicator ⁵
J1-13	J4-13	N/C		No Connection	J1-13	J4-13	Iprog	Input	Set HVout Current Level
J1-14	J4-14	Vmon	Output	Monitor HVout Voltage Level	J1-14	J4-14	Vmon	Output	Monitor HVout Voltage Level ^{1,6}
J2-1	J5-1	HVret	Ground	High Voltage Return	J2-1	J5-1	HVret	Ground	High Voltage Return ⁶
J2-2	J5-2	HVret	Ground	High Voltage Return	J2-2	J5-2	HVret	Ground	High Voltage Return ⁷
J3-1	J6-1	HVout	Output	High Voltage Output	J3-1	J6-1	HVout	Ground	High Voltage Output
J3-2	J6-2	HVout	Output	High Voltage Output	J3-2	J6-2	HVout	Ground	High Voltage Output

¹ Signal inputs: LOW < 0.8 VDC, HIGH > 2.0 VDC (OPEN OR HIGH = ENABLED)

² 5 VDC $\pm 2\%$ through 464 W impedance load.



¹ Can source an output impedance load < 10kW

² Signal input: LOW < 0.8 VDC, HIGH > 2.0 VDC (OPEN OR LOW = DISABLED)

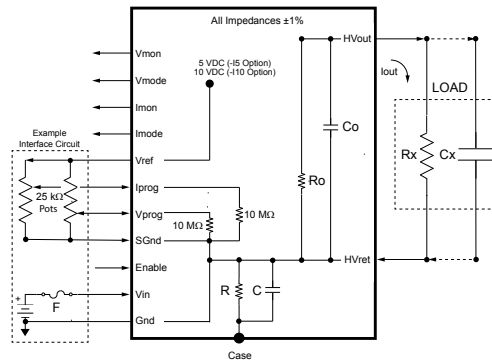
³ -I5 interface: 5 VDC $\pm 0.1\%$ @ 5 mA (nominal at case temperature = 25°C, 77°F)

⁴ -I10 interface: 10 VDC $\pm 0.1\%$ @ 5 mA (nominal at case temperature = 25°C, 77°F)

⁵ LOW = Mode ON (open drain) will sink up to 30 mA.

⁶ Voltage/current monitors will source/sink up to 2 mA.

⁷ For proper operation and safety, always route HVret signal thru HVret connection.



ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

INTERFACE CONTROL PARAMETERS

Model		1/8C Series	1/4C Series	1/2C Series	1C Series
High Voltage Output Range (Positive Polarity Unit)		0 to +125 VDC	0 to +250 VDC	0 to +500 VDC	0 to +1000 VDC
High Voltage Output Range (Negative Polarity Unit)		0 to -125 VDC	0 to -250 VDC	0 to -500 VDC	0 to -1000 VDC
Input Voltage (VDC, Nominal)		24 VDC	24 VDC	24 VDC	24 VDC
Power Output (Watts, Nominal, Total)		120 W 250 W	120 W 250 W	120 W 250 W	120 W 250 W
Standard Interface (Monitor/Control Voltage, Monitor Current)					
Scale Factors ^{1,2,3}	SVm (V/V) where HVout Monitor = SVm x Vmon	1000	1000	1000	1000
Positive Polarity Unit	SVp (V/V) where HVout Control = SVp x Vprog	27	54	108	216
Negative Polarity Unit	SVp (V/V) where HVout Control = SVp x (5 - Vprog)	-27	-54	-108	-216
	Slm (mA/V) where Iout Monitor = Slm x Imon	103 216	51.7 108	25.9 53.9	12.9 26.9
	Slp (mA/V) where Iout Control = Slp x Iprog	N/A	N/A	N/A	N/A
Impedances ⁴	Ro (HVout impedance, ±1%)	1.04 MΩ	2.55 MΩ	5.05 MΩ	10 MΩ
	Rs (Vmon upper tap impedance, ±1%)	100 MΩ	100 MΩ	100 MΩ	100 MΩ
	Rv (Vmon lower tap impedance, ±1%)	1.12 MΩ	1.12 MΩ	1.12 MΩ	1.12 MΩ
-I5 Interface (0 to 5 VDC, Monitor/Control Both Voltage and Current)					
Scale Factors ^{5,6,8,9}	SVm (V/V) where HVout Monitor = SVm x Vmon	25	50	100	200
	SVp (V/V) where HVout Control = SVp x Vprog	25	50	100	200
	Slm (mA/V) where Iout Monitor = Slm x Imon	96 200	48 100	24 50	12 25
	Slp (mA/V) where Iout Control = Slp x Iprog	96 200	48 100	24 50	12 25
Impedances ⁴	Ro (HVout impedance, ±1%)	1.04 MΩ	2.55 MΩ	5.05 MΩ	10.1 MΩ
-I10 Interface (0 to 10 VDC, Monitor/Control Both Voltage and Current)					
Scale Factors ^{5,7,8,9}	SVm (V/V) where HVout Monitor = SVm x Vmon	12.5	25	50	100
	SVp (V/V) where HVout Control = SVp x Vprog	12.5	25	50	100
	Slm (mA/V) where Iout Monitor = Slm x Imon	48 100	24 50	12 25	6 12.5
	Slp (mA/V) where Iout Control = Slp x Iprog	48 100	24 50	12 25	6 12.5
Impedances ⁴	Ro (HVout impedance, ±1%)	1.04 MΩ	2.55 MΩ	5.05 MΩ	10.1 MΩ
Other Interface Values					
Impedances ⁴	R (between HVret and case, ±1%)	1.10 MΩ	1.10 MΩ	1.10 MΩ	1.10 MΩ
	R (standard case with -I5 /-I10 option, ±1%)	1.10 MΩ	1.10 MΩ	1.10 MΩ	1.10 MΩ
Capacitance ⁴	C (@ 50 VDC ±10%, 1/8 W, max)	0.01 mF	0.01 mF	0.01 mF	0.01 mF
	Co (Internal storage capacitance)	0.66 μF	0.20 μF	0.094 μF	0.034 μF
Input Voltage Protection	F (fuse or other protection recommended)	See note 10	See note 10	See note 10	See note 10

¹ For positive polarity unit, Vprog varies from 0 to 4.64 VDC. For negative polarity unit, Vprog varies inversely from 5 to 0.36 VDC.

² Slm factor is ±2% @ 100% LOAD, 100% HVout. Valid from 10 to 100% Iout.

³ SVm factor is ±2% assuming a 10 MΩ measurement impedance. Valid from 10 to 100% HVout.

⁴ See interface schematic for definition.

⁵ Applies to interfaces on both positive and negative polarity units. For details on -I5/-I10 interfacing, see technical note TN-I5-I10-1.

⁶ For the -I5 interface, Imon, Iprog, Vmon, and Vprog input/output signals vary from 0 to 5 VDC (full-scale).

⁷ For the -I10 interface, Imon, Iprog, Vmon, and Vprog input/output signals vary from 0 to 10 VDC (full-scale).

⁸ SVm factor is ±1% for both -I5 and -I10 Interfaces. SVp factor is also ±1% and is only valid for 10 to 100% HVout.

⁹ Slm factor is ±1% for both -I5 and -I10 Interfaces. Slp factor is also ±1% and is only valid for 10 to 100% Iout.

¹⁰ For details on fuse selection, see technical note TN-23.

INTERFACE CONTROL PARAMETERS (CONTINUED)

Model		2C Series		4C Series		6C Series	
High Voltage Output Range (Positive Polarity Unit)		0 to +2000 VDC		0 to +4000 VDC		0 to +6000 VDC	
High Voltage Output Range (Negative Polarity Unit)		0 to -2000 VDC		0 to -4000 VDC		0 to -6000 VDC	
Input Voltage (VDC, Nominal)		24 VDC		24 VDC		24 VDC	
Power Output (Watts, Nominal, Total)		120 W	250 W	120 W	250 W	120 W	250 W
Standard Interface (Monitor/Control Voltage, Monitor Current)							
Scale Factors ^{1,2,3}	SVm (V/V) where HVout Monitor = SVm x Vmon	1000		1000		1000	
Positive Polarity Unit	SVp (V/V) where HVout Control = SVp x Vprog	431		862		1293	
Negative Polarity Unit	SVp (V/V) where HVout Control = SVp x (5 - Vprog)	-431		-862		-1293	
	Slm (mA/V) where Iout Monitor = Slm x Imon	6.5	13.5	3.2	6.7	2.2	4.5
	Slp (mA/V) where Iout Control = Slp x Iprog	N/A		N/A		N/A	
Impedances ⁴	Ro (HVout impedance, ± 1%)	20.1 MΩ		40.1 MΩ		60.1 MΩ	
	Rs (Vmon upper tap impedance, ± 1%)	100 MΩ		100 MΩ		100 MΩ	
	Rv (Vmon lower tap impedance, ± 1%)	1.12 MΩ		1.12 MΩ		1.12 MΩ	
-I5 Interface (0 to 5 VDC, Monitor/Control Both Voltage and Current)							
Scale Factors ^{5,6,8,9}	SVm (V/V) where HVout Monitor = SVm x Vmon	400		800		1200	
	SVp (V/V) where HVout Control = SVp x Vprog	400		800		1200	
	Slm (mA/V) where Iout Monitor = Slm x Imon	6.0	12.5	3.0	6.3	2.0	4.2
	Slp (mA/V) where Iout Control = Slp x Iprog	6.0	12.5	3.0	6.3	2.0	4.2
Impedances ⁴	Ro (HVout impedance, ±1%)	20.1 MΩ		40.1 MΩ		60.1 MΩ	
-I10 Interface (0 to 10 VDC, Monitor/Control Both Voltage and Current)							
Scale Factors ^{5,7,8,9}	SVm (V/V) where HVout Monitor = SVm x Vmon	200		400		600	
	SVp (V/V) where HVout Control = SVp x Vprog	200		400		600	
	Slm (mA/V) where Iout Monitor = Slm x Imon	3	6.3	1.5	3.1	1	2.1
	Slp (mA/V) where Iout Control = Slp x Iprog	3	6.3	1.5	3.1	1	2.1
Impedances ⁴	Ro (HVout impedance, ±1%)	20.1 MΩ		40.1 MΩ		60.1 MΩ	
Other Interface Values							
Impedances ⁴	R (between HVret and case, ±1%)	1.10 MΩ		1.10 MΩ		1.10 MΩ	
	R (standard case with -I5 /-I10 option, ±1%)	1.10 MΩ		1.10 MΩ		1.10 MΩ	
Capacitances ⁴	C (@ 50 VDC ±10%, 1/8 W, max)	0.01 mF		0.01 mF		0.01 mF	
	Co (Internal storage capacitance)	0.0168 μF		0.0084 μF		0.0056 μF	
Input Voltage Protection	F (fuse or other protection recommended)	See note 10		See note 10		See note 10	

¹ For positive polarity unit, Vprog varies from 0 to 4.64 VDC. For negative polarity unit, Vprog varies inversely from 5 to 0.36 VDC.

² Slm factor is $\pm 2\%$ @ 100% LOAD, 100% HVout. Valid from 10 to 100% Iout.

³ SVm factor is $\pm 2\%$ assuming a 10 M Ω measurement impedance. Valid from 10 to 100% HVout.

⁴ See interface schematic for definition.

⁵ Applies to interfaces on both positive and negative polarity units. For details on -I5/-I10 interfacing, see technical note TN-I5-I10-1.

⁶ For the -I5 interface, Imon, Iprog, Vmon, and Vprog input/output signals vary from 0 to 5 VDC (full-scale).

⁷ For the -I10 interface, Imon, Iprog, Vmon, and Vprog input/output signals vary from 0 to 10 VDC (full-scale).

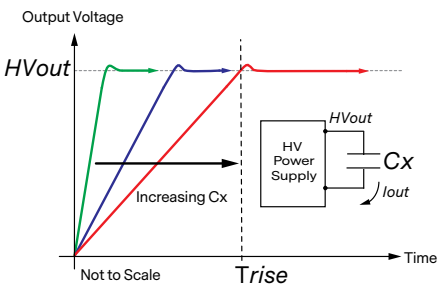
⁸ SVm factor is $\pm 1\%$ for both -I5 and -I10 Interfaces. SVp factor is also $\pm 1\%$ and is only valid for 10 to 100% HVout.

⁹ Slm factor is $\pm 1\%$ for both -I5 and -I10 Interfaces. Slp factor is also $\pm 1\%$ and is only valid for 10 to 100% Iout.

¹⁰ For details on fuse selection, see technical note TN-23.

ULTRAVOLT DUAL POLARITY 1/8C TO 6C SERIES

RISE TIME / CAPACITOR CHARGING



$$Trise = \frac{(Co + Cx) \times HVout}{Iout}$$

$$Iout = (Co + Cx) \times HVout \times freq$$

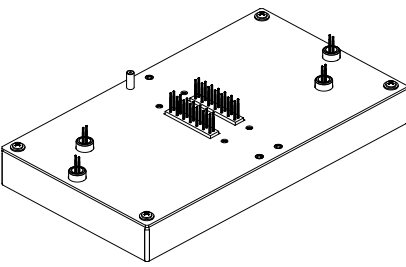
$$Pout = \frac{(Co + Cx) \times (HVout)^2}{2 \times Trise}$$

- Trise = Rise time (Seconds)
- Co = Internal storage capacitance (Farads)
- Cx = External capacitive load (Farads)
- freq = Switching frequency (Hz)
- HVout = Output voltage (VDC)
- Iout = Output current (Amps)
- Pout = Output power (Watts)

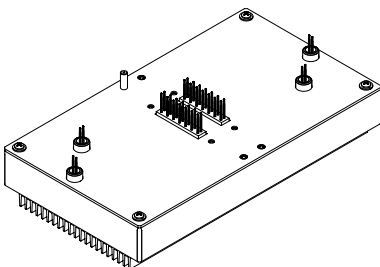
STANDARD OPTIONS

The Dual Polarity C can be configured with several options and accessories that adapt its performance and packaging to many application requirements. Customized models to meet specialized voltage ranges, packaging and environmental needs are also available.

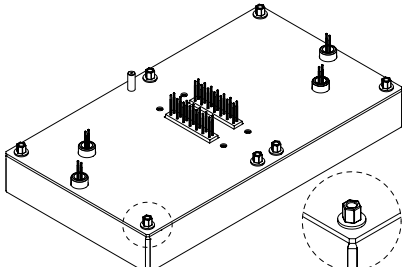
Featured Options	
-I5	Upgrades analog interface to provide more precise control and monitoring of both HVout and Iout using 0 to 5 VDC (full scale) signals. Also adds Iout control and voltage/current mode indication capability not available on the Standard Interface. Not available with -I10 option.
-I10	Upgrades analog interface to provide more precise control and monitoring of both HVout and Iout using 0 to 10 VDC (full scale) signals. Also adds Iout control and voltage/current mode indication capability not available on the Standard Interface. Not available with -I5 option.
-H	Mounts a heatsink onto the case bottom to assist in convective heat dissipation.
-Z11	Permits PCB mounting by adding 4.8 mm (0.188 in) x #4-40 threaded standoffs to the case top.



Standard Configuration
(All Interface Options)



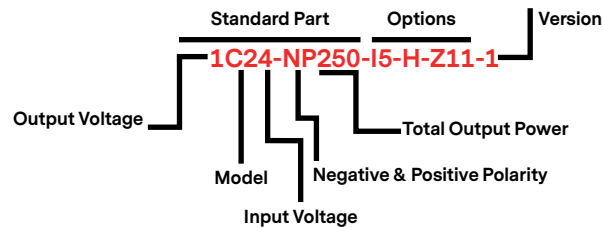
-H Option (Heatsink)



-Z11 Option (PCB Standoffs)

ORDERING INFORMATION

Standard Part		STANDARD CONFIGURATION										OPTIONS				Other Options	Version Code (Required)
		Electrical Performance								Standard Features		Interfaces	Mechanical				
												Select One					
		Number of High Voltage Outputs	High Voltage Output Range (+HVout VDC, Positive Polarity Unit)	High Voltage Output Range (-HVout VDC, Positive Polarity Unit)	Input Voltage (Vin, VDC)	High Voltage Output Polarity (Unipolar)	Positive Polarity Unit Power (Pout, Watts)	Negative Polarity Power (Pout, Watts)	Total Power Output (Pout, Watts)	Dual Standard Interfaces	Aluminum Case (Anodized)	Chassis Mount Studs	50 ppm/°C Temperature Coefficient	Dual -15 Interfaces (0 to 5 VDC Monitors/Controls)	Dual -110 Interfaces (0 to 10 VDC Monitors/ Controls)		
1/8C	1/8C24-NP125	2	0 to 125	0 to -125	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	1/8C24-NP250	2	0 to 125	0 to -125	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
1/4C	1/4C24-NP125	2	0 to 250	0 to -250	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	1/4C24-NP250	2	0 to 250	0 to -250	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
1/2C	1/2C24-NP125	2	0 to 500	0 to -500	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	1/2C24-NP250	2	0 to 500	0 to -500	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
1C	1C24-NP125	2	0 to 1000	0 to -1000	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	1C24-NP250	2	0 to 1000	0 to -1000	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
2C	2C24-NP125	2	0 to 2000	0 to -2000	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	2C24-NP250	2	0 to 2000	0 to -2000	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
4C	4C24-NP125	2	0 to 4000	0 to -4000	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	4C24-NP250	2	0 to 4000	0 to -4000	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	
6C	6C24-NP125	2	0 to 6000	0 to -6000	24	Pos/Neg	60	60	120	Included			-15	-110	-H	-Z11	
	6C24-NP250	2	0 to 6000	0 to -6000	24	Pos/Neg	125	125	250	Included			-15	-110	-H	-Z11	





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CAUTION:
High Voltage

Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.

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ENG-HV-Dual-Polarity-C-1/8-6-235-01 2.19

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