



# UMR-HPC SERIES

125 to 30,000V, 60 to 250W  
Standard DC/DC Modules



## Features

- Capacitor Charging High Voltage Power Supplies
- Regulated Output Voltage from  $V_{OUT}$  Max to True Zero
- Wide Input Voltage Range
- Indefinite Output Short Circuit Protection
- Output Voltage and Current Monitors
- Fixed-Frequency, Low-Stored-Energy Design
- Designed for Continuous Output Power
- UL/cUL Recognized Component; CE Mark (LVD and RoHS)

## Specifications

		Conditions			Value	Units
Input		60W	125W	250W		
<b>Voltage</b>	Nominal	+24	+24	+24		VDC
<b>Voltage Range</b>	Full Power	+23 to 30	+23 to 30	+23 to 30		VDC
<b>Voltage Range</b>	Derated Power Range	+10 to 32	+10 to 32	+15 to 30		VDC
<b>Current</b>	Standby/Disable	<90	<90	<90		mA
<b>Current</b>	No Load, Max $V_{OUT}$	<500	<500	<600		mA
<b>Current</b>	Full Load, Max $V_{OUT}$	<3.25	<6.30	<13.00		A
<b>AC Ripple Current</b>	Nominal Input, Full Load	<150	<200	<200		mAp-p
<b>Output</b>						
<b>Static Load Regulation</b>	No Load to Full Load, Max $V_{OUT}$		<0.01			%VDC
<b>Line Regulation</b>	Nominal Input, Max $V_{OUT}$ , Full Power		<0.08			%VDC
<b>Stability</b>	30-minute warmup, per 8h/per day		<0.01 / <0.02			%VDC
<b>High Frequency Ripple</b>	Full Load, 1Hz to 1MHz, Max $E_{OUT}$		<1.00			%Vp-p
<b>Programming &amp; Controls</b>						
<b>Input Impedance</b>	Nominal Input, Positive Models	1.0 to Signal Ground			M $\Omega$	
	Nominal Input, Negative Models	1.1 to $V_{REF}$				
<b>Adjust Resistance</b>	Typical Potentiometer Values	10K to 100K (Pot Across $V_{REF}$ and Signal Ground, Wiper to Adjust)			$\Omega$	
<b>Adjust Logic (<math>V_{ADJ}</math>)<sup>1</sup></b>	Positive Models	0 to +4.64 = 0 to 100% Rated Output			VDC	
	Negative Models	+5 to +0.36 = 0 to 100% Rated Output				
<b>Reference Voltage (<math>V_{REF}</math>)</b>	Temperature +25°C	+5 $\pm$ 0.5%			VDC	
<b>Enable/Disable <math>HV_{OUT}</math></b>	-	Unconnected = Enabled; Ground to +0.5 = Disabled; +2.4 to 32 = Enabled			VDC	
<b>Environmental</b>						
<b>Operating Temperature<sup>2</sup></b>	Case Temperature, Full Load, Max $V_{OUT}$	-40 to +65			$^{\circ}$ C	
<b>Temperature Coefficient</b>	Over the Specified Temperature	$\pm$ 50			PPM/ $^{\circ}$ C	
<b>Thermal Shock</b>	Mil-Std-810, Method 503-4, Proc. II	-40 to +65			$^{\circ}$ C	
<b>Storage Temperature</b>	Non-Operating, Case Temperature	-55 to +105			$^{\circ}$ C	
<b>Humidity</b>	All Conditions, Standard Package	0 to 95% Non-Condensing			-	
<b>Altitude</b>	All Conditions, Standard Package	Sea Level through Vacuum			-	
<b>Shock</b>	Mil-Std-810, Method 516.5, Proc IV	20			G	
<b>Vibration</b>	Mil-Std-810, Method 514.5, Fig 514.5C-3	10			G	

<sup>1</sup>V05 or V10 Options (additional details on pg.5)

<sup>2</sup>Typically, convection cooled. Units operating at full power might require additional cooling to maintain case temperature below 65°C. Damage to the power supply may occur if not appropriately cooled during use.



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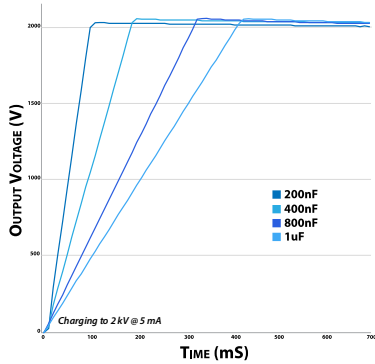
Part Number <sup>3</sup>	Output Voltage VDC	Output Current mA	Output Capacitance $\mu$ F	I <sub>MON</sub> Scaling <sup>4</sup> mA/V	V <sub>MON</sub> Scaling <sup>5</sup>
<b>60W Models</b>					
UMR-HPC-125*-60	0 to 125	480.00	2.20000	400.00	100:1 $\pm$ 1%
UMR-HPC-250*-60	0 to 250	240.00	1.00000	200.00	100:1 $\pm$ 1%
UMR-HPC-500*-60	0 to 500	120.00	0.33000	109.00	100:1 $\pm$ 1%
UMR-HPC-1000*-60	0 to 1000	60.00	0.15000	50.00	100:1 $\pm$ 1%
UMR-HPC-2000*-60	0 to 2000	30.00	0.15000	26.00	100:1 $\pm$ 1%
UMR-HPC-4000*-60	0 to 4000	15.00	0.10000	11.50	100:1 $\pm$ 1%
UMR-HPC-6000*-60	0 to 6000	10.00	0.00660	6.20	100:1 $\pm$ 1%
UMR-HPC-8000*-60	0 to 8000	7.50	0.00250	4.70	1000:1 $\pm$ 1%
UMR-HPC-10000*-60	0 to 10000	6.00	0.00200	4.10	1000:1 $\pm$ 1%
UMR-HPC-12000*-60	0 to 12000	5.00	0.00150	4.00	1000:1 $\pm$ 1%
UMR-HPC-15000*-60	0 to 15000	4.00	0.00110	4.00	1000:1 $\pm$ 1%
UMR-HPC-20000*-60	0 to 20000	3.00	0.00088	0.65	1000:1 $\pm$ 1%
UMR-HPC-25000*-60	0 to 25000	2.40	0.00073	0.65	1000:1 $\pm$ 1%
UMR-HPC-30000*-60	0 to 30000	2.00	0.00050	0.65	1000:1 $\pm$ 1%
<b>125W Models</b>					
UMR-HPC-125*-125	0 to 125	1000.00	2.20000	833.00	100:1 $\pm$ 1%
UMR-HPC-250*-125	0 to 250	500.00	1.00000	417.00	100:1 $\pm$ 1%
UMR-HPC-500*-125	0 to 500	250.00	0.33000	208.00	100:1 $\pm$ 1%
UMR-HPC-1000*-125	0 to 1000	125.00	0.15000	114.00	100:1 $\pm$ 1%
UMR-HPC-2000*-125	0 to 2000	62.00	0.15000	52.00	100:1 $\pm$ 1%
UMR-HPC-4000*-125	0 to 4000	31.00	0.10000	26.00	100:1 $\pm$ 1%
UMR-HPC-6000*-125	0 to 6000	21.00	0.00660	17.70	100:1 $\pm$ 1%
UMR-HPC-8000*-125	0 to 8000	15.50	0.00250	14.20	1000:1 $\pm$ 1%
UMR-HPC-10000*-125	0 to 10000	12.50	0.00200	10.90	1000:1 $\pm$ 1%
UMR-HPC-12000*-125	0 to 12000	10.50	0.00150	7.40	1000:1 $\pm$ 1%
UMR-HPC-15000*-125	0 to 15000	8.30	0.00110	7.50	1000:1 $\pm$ 1%
UMR-HPC-20000*-125	0 to 20000	6.25	0.00088	0.65	1000:1 $\pm$ 1%
UMR-HPC-25000*-125	0 to 25000	5.00	0.00073	0.65	1000:1 $\pm$ 1%
UMR-HPC-30000*-125	0 to 30000	4.17	0.00050	0.65	1000:1 $\pm$ 1%
<b>250W Models</b>					
UMR-HPC-125*-250	0 to 125	2000.00	2.20000	1667.00	100:1 $\pm$ 1%
UMR-HPC-250*-250	0 to 250	1000.00	1.00000	833.00	100:1 $\pm$ 1%
UMR-HPC-500*-250	0 to 500	500.00	0.33000	417.00	100:1 $\pm$ 1%
UMR-HPC-1000*-250	0 to 1000	250.00	0.15000	227.00	100:1 $\pm$ 1%
UMR-HPC-2000*-250	0 to 2000	125.00	0.15000	104.00	100:1 $\pm$ 1%
UMR-HPC-4000*-250	0 to 4000	62.00	0.10000	52.00	100:1 $\pm$ 1%
UMR-HPC-6000*-250	0 to 6000	42.00	0.00660	35.00	100:1 $\pm$ 1%
UMR-HPC-8000*-250	0 to 8000	31.20	0.00250	6.25	1000:1 $\pm$ 1%
UMR-HPC-10000*-250	0 to 10000	25.00	0.00200	5.00	1000:1 $\pm$ 1%
UMR-HPC-12000*-250	0 to 12000	20.80	0.00150	4.17	1000:1 $\pm$ 1%
UMR-HPC-15000*-250	0 to 15000	16.70	0.00110	3.33	1000:1 $\pm$ 1%
UMR-HPC-20000*-250	0 to 20000	12.50	0.00088	2.50	1000:1 $\pm$ 1%
UMR-HPC-25000*-250	0 to 25000	10.00	0.00073	2.00	1000:1 $\pm$ 1%
UMR-HPC-30000*-250	0 to 30000	8.33	0.00050	1.67	1000:1 $\pm$ 1%

<sup>3</sup>For “\*”, substitute “P” for positive output or “N” for negative output

<sup>4</sup>Full Scale Signal

<sup>5</sup>Into 10M $\Omega$

**Rise Time/Capacitor Charging**



Typical Rise Time:

$$t_R = \frac{C + C_{ext}}{I_o} V_o$$

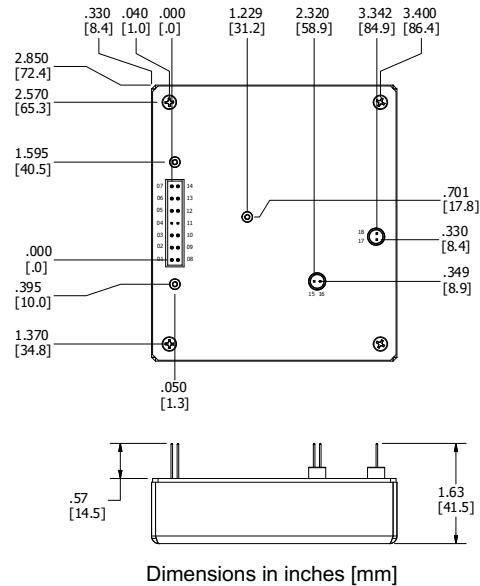
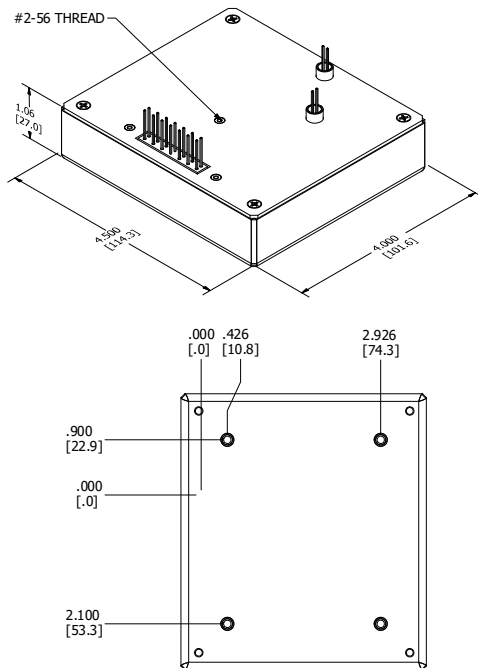
Minimum Rise Time is 10nS

**Abbreviations:**

- C Output Capacitance of Power Supply
- C<sub>ext</sub> Capacitance of External Capacitor
- V<sub>o</sub> Power Supply Output Voltage
- F Power Supply Discharge Frequency
- I<sub>o</sub> Nominal Output Current
- t<sub>r</sub> Rise Time

**Mechanical Drawings and Pin Assignments**

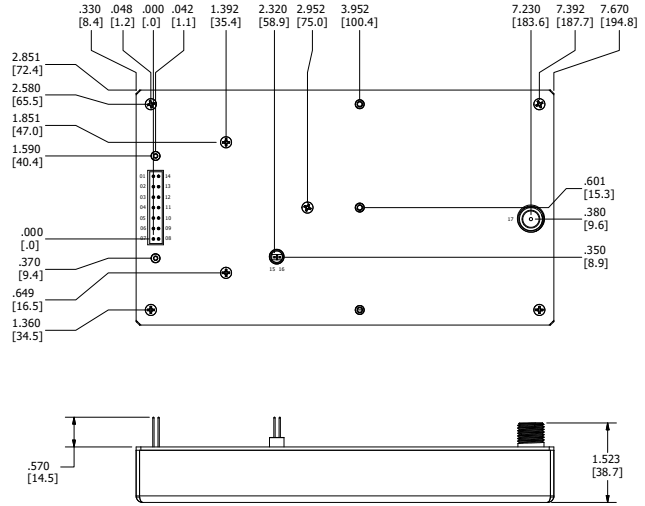
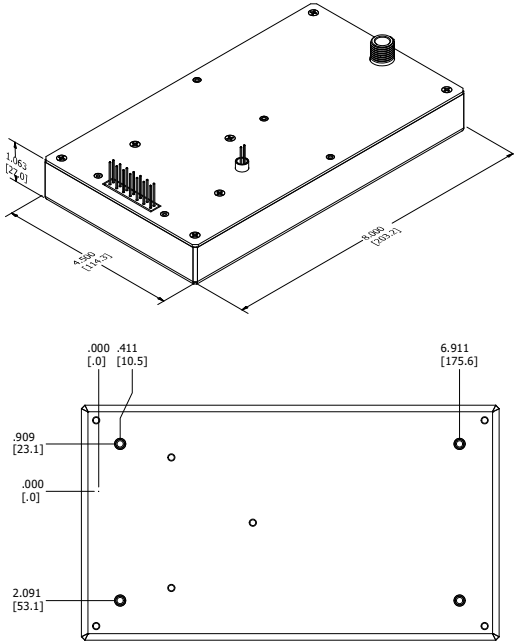
125V to 6kV, 60 to 125W



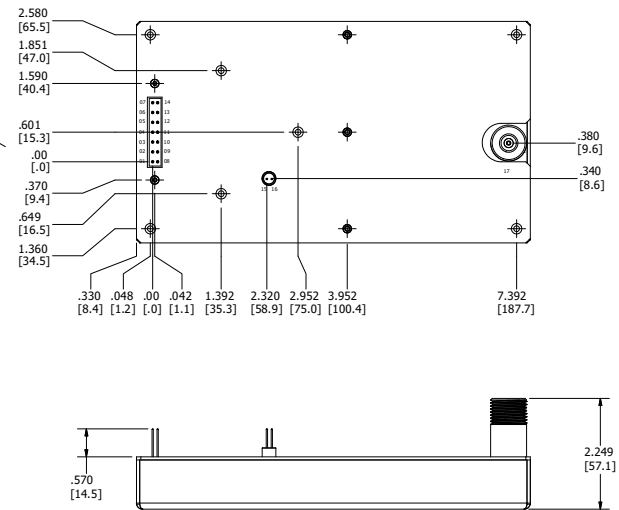
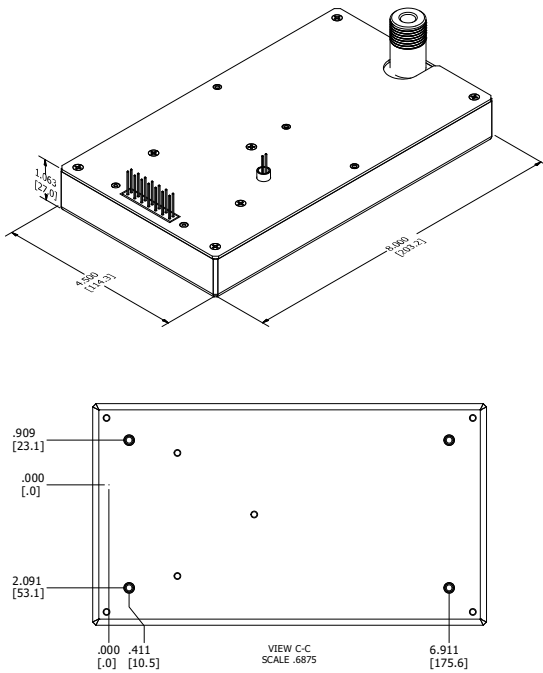


# UMR-HPC SERIES

8 to 15kV, 60 to 125W



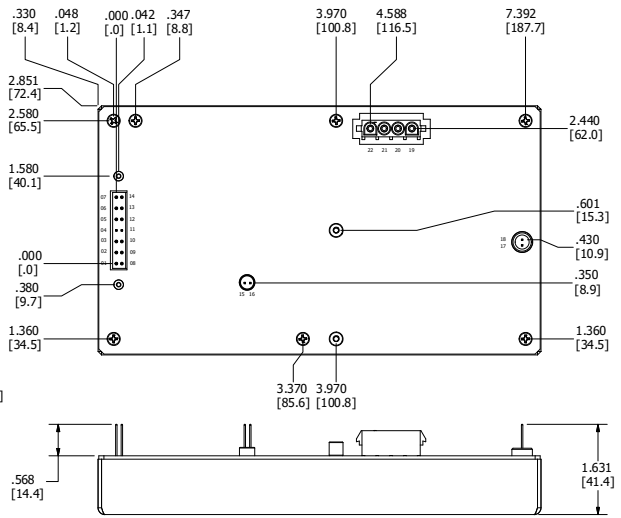
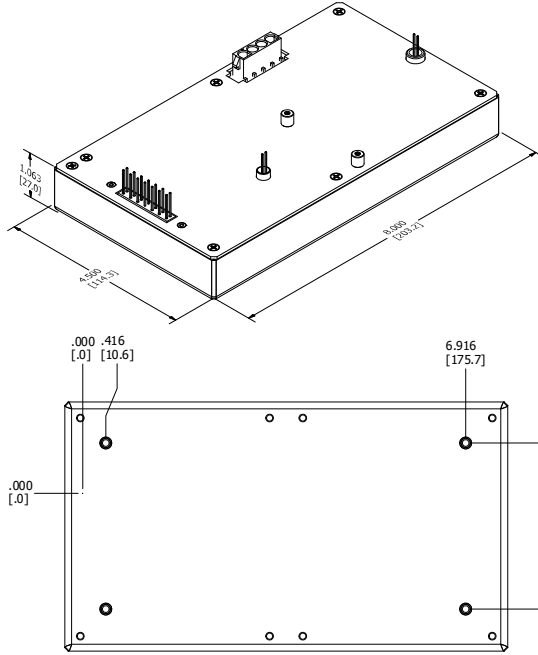
20 to 30kV, 60 to 125W





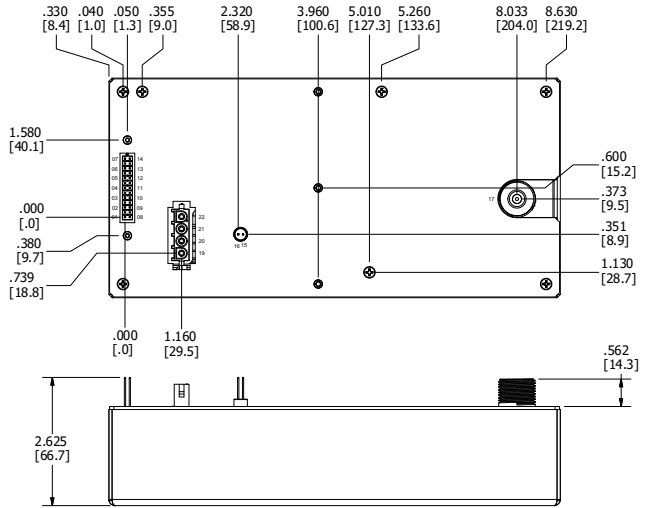
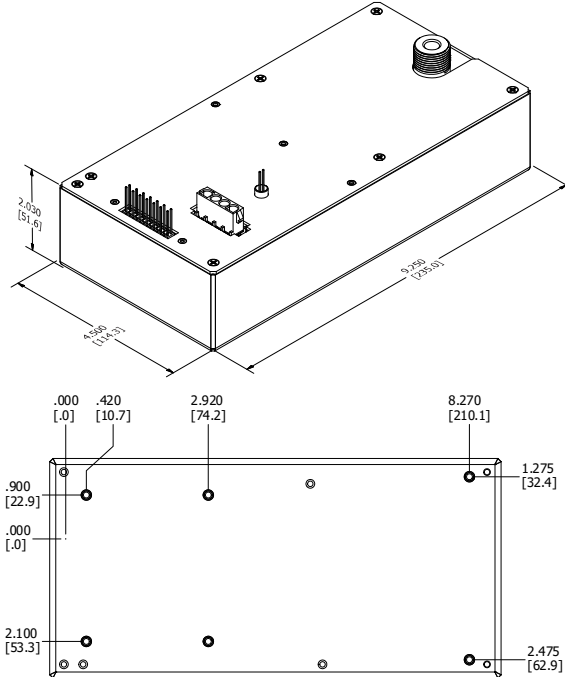
# UMR-HPC SERIES

125V to 6kV, 250W



Dimensions in inches [mm]

8kV to 30kV, 250W



Dimensions in inches [mm]



# UMR-HPC SERIES

Mechanical Specifications		
Volume	19.2in <sup>3</sup> [314cm <sup>3</sup> ]	125V to 6kV, 60W & 125W
	38.7in <sup>3</sup> [634cm <sup>3</sup> ]	8 to 30kV, 60W & 125W
	38.3in <sup>3</sup> [628cm <sup>3</sup> ]	125V to 6kV, 250W
	84.5in <sup>3</sup> [1385cm <sup>3</sup> ]	8 to 30kV, 250W
Weight	22oz [605g]	125V to 6kV, 60 to 125W
	42oz [1200g]	8 to 30kV, 60 to 125W
	41oz [1164g]	125V to 6kV, 250W
	88oz [2505g]	8 to 30kV, 250W
Case	Aluminum Anodized	
Pins	Pins 1-7, 8-14	0.200in Spacing
	Pins 15-16, 17-18	0.100in Spacing

Tolerances	
Overall	0.050in [±1.27mm]
Pin to Pin	0.015in [±0.38mm]
Mounting	0.025in [±0.64mm]

## 60W & 125W Models

Pin Assignments & Connections		
Pin 1, 8	PWRGND	Input Power Ground Return
Pin 2, 9	+VIN	Positive Power Input
Pin 3	IMON	Output Current Monitor
Pin 4	ENABLE	Enable/Disable
Pin 5	SIGGND	Signal Ground Return
Pin 6	VADJ	Voltage Adjust
Pin 7	VREF	Voltage Reference
Pin 10	N/C	N/C
Pin 11	N/C	N/C
Pin 12	N/C	N/C
Pin 13	N/C	N/C
Pin 14	VMON	Output Voltage Monitor
Pin 15, 16	HVRTN	High Voltage Ground Return
Pin 17, 18	HVOUT	High Voltage Output

## 250W Models

Pin Assignments & Connections		
Pin 1, 8	N/C	N/C
Pin 2, 9	N/C	N/C
Pin 3	IMON	Output Current Monitor
Pin 4	ENABLE	Enable/Disable
Pin 5	SIGGND	Signal Ground Return
Pin 6	VADJ	Voltage Adjust
Pin 7	VREF	Voltage Reference
Pin 10	N/C	N/C
Pin 11	N/C	N/C
Pin 12	N/C	N/C
Pin 13	N/C	N/C
Pin 14	N/C	N/C
Pin 15, 16	HVRTN	High Voltage Ground Return
Pin 17, 18	HVOUT	High Voltage Output
Pin 19, 20	+VIN	Positive Power Input
Pin 21, 22	PWRGND	Input Power Ground Return

## Options

Append to Part #	Option Description	Not Compatible With
-V05	Enhanced Controls and Monitors, 0 to +5VDC	V10
-V10	Enhanced Controls and Monitors, 0 to +10VDC	V05
-H	Aluminum Heat Sink, 0.500in H	SS
-ST	Standoffs on Top of Cover, PCB Support	-
-SS	Threaded Studs for Mounting (#8-32x0.75)	H



## V05 and V10 Options

Conditions		Value	Units
<b>Output</b>			
<b>Current Scaling (I<sub>MON</sub>)</b>	V05 Option, Buffered Signal	0 to +5 = 0 to 100% Rated Output	VDC
	V10 Option, Buffered Signal	0 to +10 = 0 to 100% Rated Output	
<b>Voltage Scaling (V<sub>MON</sub>)</b>	V05 Option, Buffered Signal	0 to +5 = 0 to 100% Rated Output	VDC
	V10 Option, Buffered Signal	0 to +10 = 0 to 100% Rated Output	
<b>Programming &amp; Controls</b>			
<b>Adjust Logic (V<sub>ADJ</sub>)</b>	V05 Option	0 to +5 = 0 to 100% Rated Output	VDC
	V10 Option	0 to +10 = 0 to 100% Rated Output	
<b>Reference Voltage (V<sub>REF</sub>)</b>	Temperature +25°C, V05 Option	+5 ± 0.5%	VDC
	Temperature +25°C, V10 Option	+10 ± 0.5%	
<b>Enable/Disable HV<sub>OUT</sub></b>	-	Unconnected = Disabled; Ground to +0.5 = Disabled; +2.4 to 32 = Enabled	VDC
<b>Mode Indicator</b>	IMODE	Open Drain, Pulled Low When Active, 0 to 60V and 100mA Max	-
	VMODE	Open Drain, Pulled Low When Active, 0 to 60V and 100mA Max	

## 60W & 125W Models

Pin Assignments & Connections		
Pin 1, 8	PWRGND	Input Power Ground Return
Pin 2, 9	+VIN	Positive Power Input
Pin 3	IMON	Output Current Monitor
Pin 4	ENABLE	Enable/Disable
Pin 5	SIGGND	Signal Ground Return
Pin 6	VADJ	Voltage Adjust
Pin 7	VREF	Voltage Reference
Pin 10	N/C	N/C
Pin 11	IMODE	Current Mode Indicator
Pin 12	VMODE	Voltage Mode Indicator
Pin 13	IADJ	Current Adjust
Pin 14	VMON	Output Voltage Monitor
Pin 15, 16	HVRTN	High Voltage Ground Return
Pin 17, 18	HVOUT	High Voltage Output

## 250W Models

Pin Assignments & Connections		
Pin 1, 8	N/C	N/C
Pin 2, 9	N/C	N/C
Pin 3	IMON	Output Current Monitor
Pin 4	ENABLE	Enable/Disable
Pin 5	SIGGND	Signal Ground Return
Pin 6	VADJ	Voltage Adjust
Pin 7	VREF	Voltage Reference
Pin 10	N/C	N/C
Pin 11	IMODE	Current Mode Indicator
Pin 12	VMODE	Voltage Mode Indicator
Pin 13	IADJ	Current Adjust
Pin 14	VMON	Output Voltage Monitor
Pin 15, 16	HVRTN	High Voltage Ground Return
Pin 17, 18	HVOUT	High Voltage Output
Pin 19, 20	+VIN	Positive Power Input
Pin 21, 22	PWRGND	Input Power Ground Return

## Certifications and Compliances

