



# UMR-A SERIES

125 to 6000V, 4 to 30W  
Standard DC/DC Modules



## Features

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

## Specifications

Conditions		Value			Units
Input		4W	20W	30W	
<b>Voltage</b>	Nominal	+12	+24	+24	VDC
<b>Voltage Range</b>	Full Power	+11 to 16	+23 to 30	+23 to 30	VDC
<b>Voltage Range</b>	Derated Power Range	+10 to 32	+10 to 32	+10 to 32	VDC
<b>Current</b>	Standby/Disable	<80	<80	<80	mA
<b>Current</b>	No Load, Max $V_{OUT}$	<150	<150	<150	mA
<b>Current</b>	Full Load, Max $V_{OUT}$	<500	<1000	<1500	mA
<b>AC Ripple Current</b>	Nominal Input, Full Load	<100	<100	<100	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>Programming &amp; Controls</b>					
<b>Input Impedance</b>	Nominal Input, Positive Models	1.5 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			°C
<b>Temperature Coefficient</b>	Over the Specified Temperature	$\pm$ 50			PPM/°C
<b>Thermal Shock</b>	Mil-Std-810, Method 503-4, Proc. II	-40 to +65			°C
<b>Storage Temperature</b>	Non-Operating, Case Temperature	-55 to +105			°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.4)

<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.



# UMR-A SERIES

Part Number <sup>3</sup>	Output Voltage VDC	Output Current mA	High Freq. Ripple <sup>4</sup> %Vp-p		Output Capacitance $\mu$ F		I <sub>MON</sub> Scaling <sup>5</sup> mA/V	V <sub>MON</sub> Scaling <sup>6</sup> V
			Base	Option F	Base	Option F		
<b>4W Models</b>								
UMR-A-125*-4	0 to 125	32.00	0.029	0.0030	1.0000	1.300	438	10:1 $\pm$ 2%
UMR-A-250*-4	0 to 250	16.00	0.010	0.0030	1.0000	1.300	213	10:1 $\pm$ 2%
UMR-A-500*-4	0 to 500	8.00	0.007	0.0010	0.0500	0.080	123	10:1 $\pm$ 2%
UMR-A-1000*-4	0 to 1000	4.00	0.028	0.0015	0.0100	0.030	56	100:1 $\pm$ 2%
UMR-A-2000*-4	0 to 2000	2.00	0.015	0.0030	0.0050	0.030	32	100:1 $\pm$ 2%
UMR-A-4000*-4	0 to 4000	1.00	0.015	0.0020	0.0050	0.015	17	100:1 $\pm$ 2%
UMR-A-6000*-4	0 to 6000	0.67	0.021	0.0025	0.0033	0.010	13	100:1 $\pm$ 2%
<b>20W Models</b>								
UMR-A-125*-20	0 to 125	160.0	0.040	0.0050	8.9000	9.200	1900	10:1 $\pm$ 2%
UMR-A-250*-20	0 to 250	80.0	0.021	0.0030	1.0000	1.300	1000	10:1 $\pm$ 2%
UMR-A-500*-20	0 to 500	40.0	0.019	0.0010	1.0000	1.300	506	10:1 $\pm$ 2%
UMR-A-1000*-20	0 to 1000	20.0	0.048	0.0015	0.0500	0.080	244	100:1 $\pm$ 2%
UMR-A-2000*-20	0 to 2000	10.0	0.026	0.0030	0.0100	0.030	130	100:1 $\pm$ 2%
UMR-A-4000*-20	0 to 4000	5.0	0.030	0.0020	0.0050	0.015	67	100:1 $\pm$ 2%
UMR-A-6000*-20	0 to 6000	3.3	0.039	0.0025	0.0033	0.010	49	100:1 $\pm$ 2%
<b>30W Models</b>								
UMR-A-125*-30	0 to 125	240.0	0.040	0.0050	8.9000	9.200	2900	10:1 $\pm$ 2%
UMR-A-250*-30	0 to 250	120.0	0.033	0.0035	1.0000	1.300	1400	10:1 $\pm$ 2%
UMR-A-500*-30	0 to 500	60.0	0.020	0.0010	1.0000	1.300	740	10:1 $\pm$ 2%
UMR-A-1000*-30	0 to 1000	30.0	0.048	0.0015	0.0500	0.080	400	100:1 $\pm$ 2%
UMR-A-2000*-30	0 to 2000	15.0	0.036	0.0030	0.0100	0.030	212	100:1 $\pm$ 2%
UMR-A-4000*-30	0 to 4000	7.5	0.036	0.0020	0.0050	0.015	86	100:1 $\pm$ 2%
UMR-A-6000*-30	0 to 6000	5.0	0.045	0.0025	0.0033	0.010	57	100:1 $\pm$ 2%

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

<sup>4</sup>1Hz to 1MHz

<sup>5</sup>Full Scale Signal

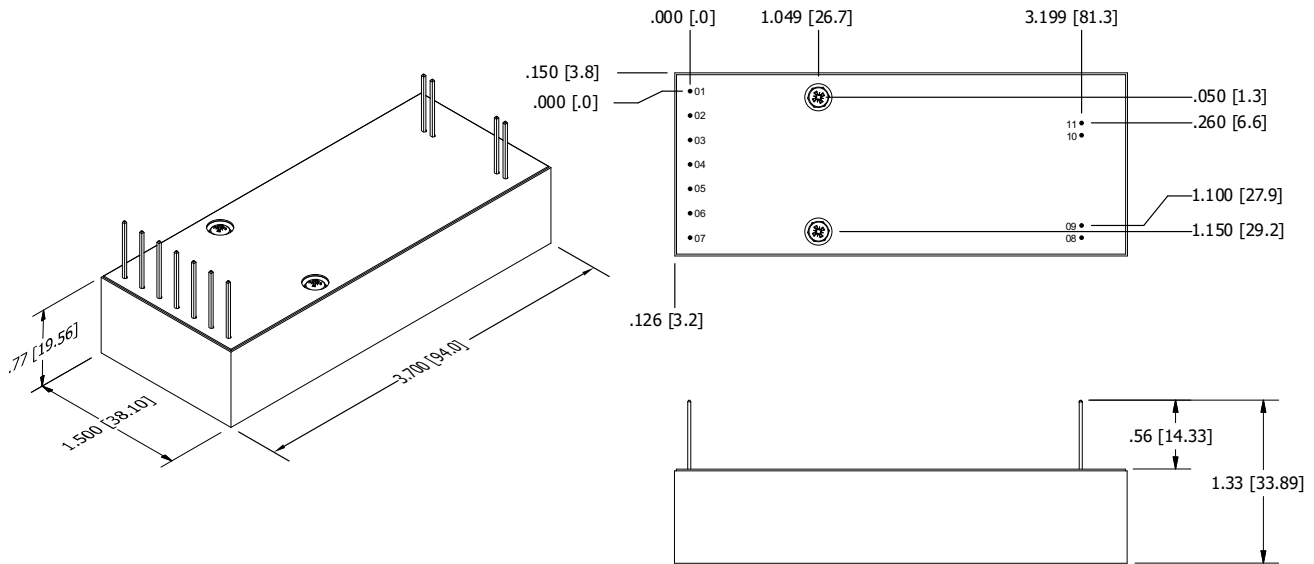
<sup>6</sup>Into 10M $\Omega$  Meter for Models with Y05 Option and F Option.

## Options

Append to Part #	Option Description	Not Compatible With
-V05	Enhanced Controls and Monitors, 0 to +5VDC	V10, Y05
-V10	Enhanced Controls and Monitors, 0 to +10VDC	V05, Y05, 4W models
-Y05	Output Voltage Monitor	-
-H	Aluminum Heat Sink	E, C
-F	Integral Output Filter	Y05
-T	$\pm$ 25PPM/ $^{\circ}$ C Temperature Coefficient <sup>7</sup>	-
-W	Flying Lead for High Voltage Output	-
-M	Mu-Metal Shielding Over Case	-
-E	Eared Mounting Plate	H
-C	RF Tight Aluminum Case	E, H

<sup>7</sup>Operating Temperature is +10 to +45 $^{\circ}$ C.

## Mechanical Drawings and Pin Assignments



Dimensions in inches [mm]

Mechanical Specifications	
<b>Volume</b>	4.3in <sup>3</sup> [70.5cm <sup>3</sup> ]
<b>Weight</b>	5.0oz [142g]
<b>Case</b>	DAP case certified to ASTM-D-5948
<b>Pins</b>	Pins 1-7 0.200in Spacing Pins 8-9, 10-11 0.100in Spacing

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

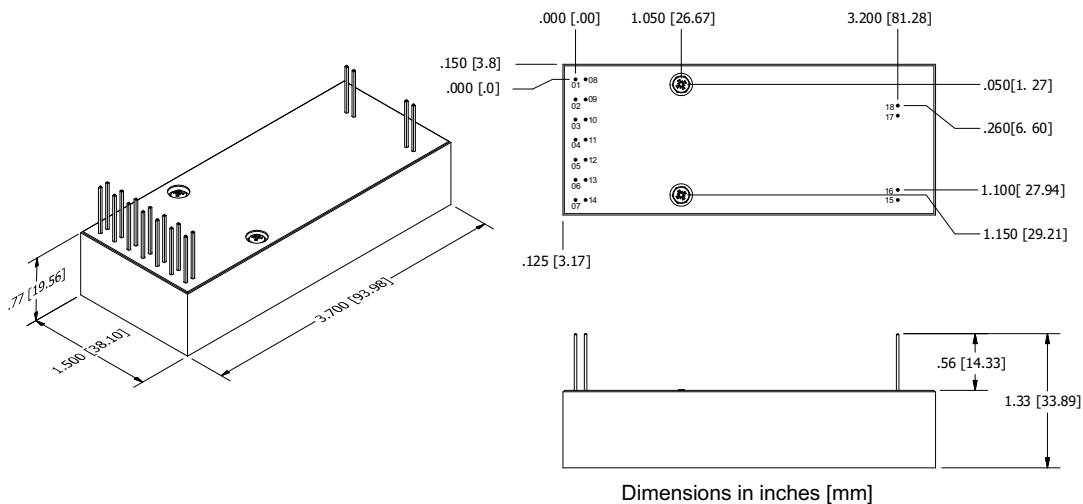
Pin Assignments & Connections		
<b>Pin 1</b>	PWRGND <sup>8</sup>	Input Power Ground Return
<b>Pin 2</b>	+VIN	Positive Power Input
<b>Pin 3</b>	IMON <sup>8</sup>	Output Current Monitor
<b>Pin 4</b>	ENABLE	Enable/Disable
<b>Pin 5</b>	SIGGND	Signal Ground Return
<b>Pin 6</b>	VADJ <sup>8</sup>	Voltage Adjust
<b>Pin 7</b>	VREF	Voltage Reference
<b>Pin 8, 9</b>	HVRTN <sup>9</sup>	High Voltage Ground Return
<b>Pin 10,11</b>	HVOUT	High Voltage Output

<sup>8</sup>PWRGND may be labelled -VIN, IMON as IOUT, and VADJ as RMTADJ on some models.

<sup>9</sup>Pin 9 becomes VMON - Output Voltage Monitor for the Y05 Option.

## V05 and V10 Options

	Conditions	Value	Units
<b>Output</b>			
<b>Current Scaling (<math>I_{MON}</math>)</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 (<math>V_{MON}</math>)</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 (<math>I_{ADJ}</math> &amp; <math>V_{ADJ}</math>)</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 (<math>V_{REF}</math>)</b>	V05 Option	+5 $\pm$ 0.5%, 10mA Source	VDC
	V10 Option	+10 $\pm$ 0.5%, 30mA Source	
<b>Enable/Disable <math>HV_{OUT}</math></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	



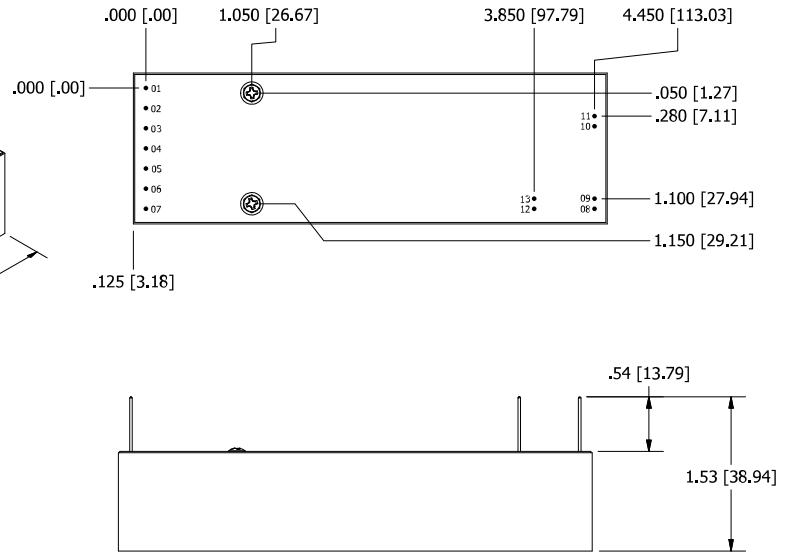
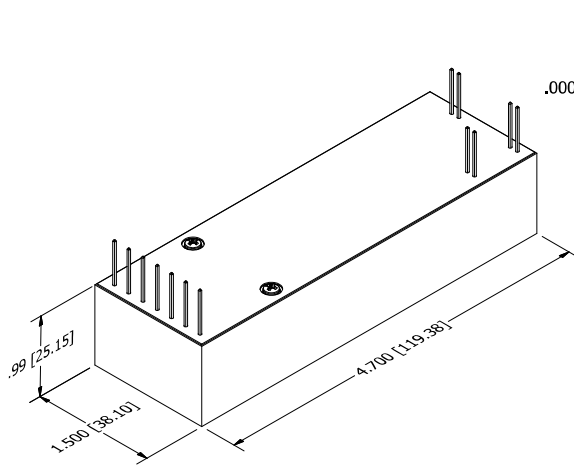
Mechanical Specifications	
<b>Volume</b>	4.3in <sup>3</sup> [70.5cm <sup>3</sup> ]
<b>Weight</b>	5.0oz [142g]
<b>Case</b>	DAP case certified to ASTM-D-5948
<b>Pins</b>	Pins 1-7, 8-14 0.200in Spacing
	Pins 15-16, 17-18 0.100in Spacing

Tolerances	
<b>Overall</b>	0.050in [ $\pm$ 1.27mm]
<b>Pin to Pin</b>	0.015in [ $\pm$ 0.38mm]
<b>Mounting</b>	0.025in [ $\pm$ 0.64mm]

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

<sup>10</sup>PWRGND may be labelled -VIN on some models.

## F Option



Dimensions in inches [mm]

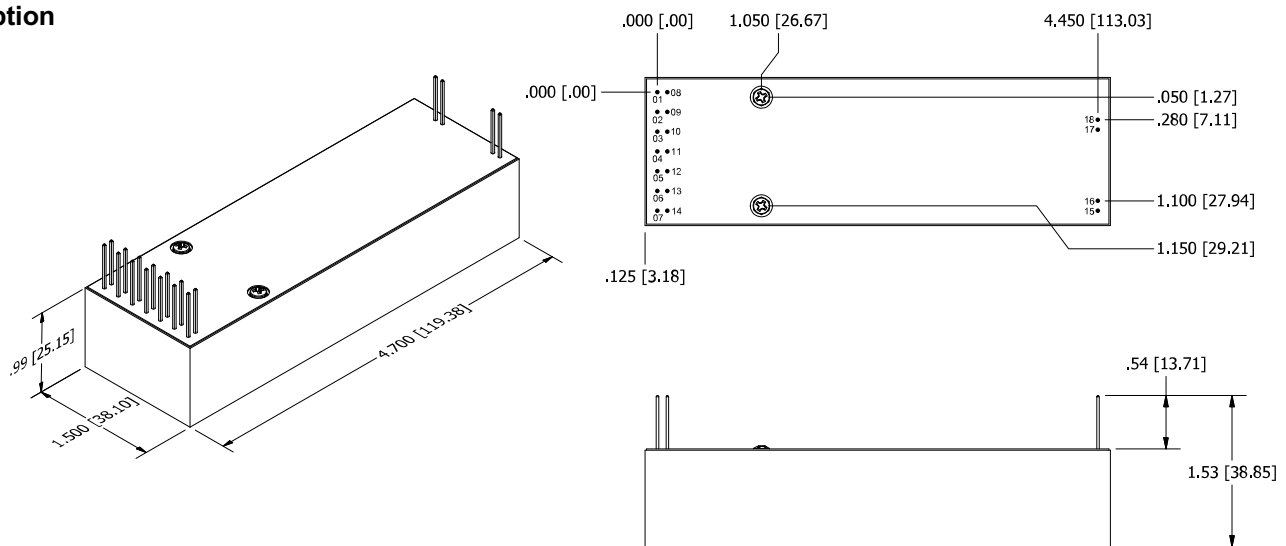
Mechanical Specifications	
<b>Volume</b>	7.0in <sup>3</sup> [114cm <sup>3</sup> ]
<b>Weight</b>	7.6oz [215g]
<b>Case</b>	DAP case certified to ASTM-D-5948
<b>Pins</b>	Pins 1-7, 8-14 0.200in Spacing Pins 15-16, 17-18 0.100in Spacing

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

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

<sup>11</sup>PWRGND may be labelled -VIN, IMON as IOUT, and VADJ as RMTADJ on some models.

## V-F Option



Dimensions in inches [mm]

Mechanical Specifications	
<b>Volume</b>	7.0in <sup>3</sup> [114cm <sup>3</sup> ]
<b>Weight</b>	7.6oz [215g]
<b>Case</b>	DAP case certified to ASTM-D-5948
<b>Pins</b>	Pins 1-7, 8-14    0.200in Spacing Pins 15-16, 17-18    0.100in Spacing

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

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

<sup>12</sup>PWRGND may be labelled -VIN, IMON as IOUT, and VADJ as RMTADJ on some models.

## Certifications and Compliances

