

I600ERW Series

2:1 Input, 6W Ultra-Miniature DC/DC Converters



Key Features:

- 6W Output Power
- 2:1 Input Range
- Miniature 1" x 1" Case
- Single & Dual Outputs
- 1,500 VDC Isolation
- >1 MHour MTBF
- 16 Standard Models
- **LOW COST!!**



MicroPower Direct

292 Page Street
Suite D
Stoughton, MA 02072
USA

T: (781) 344-8226
F: (781) 344-8481
E: sales@micropowerdirect.com
W: www.micropowerdirect.com



Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	5 VDC Input	4.5	5.0	9.0	VDC
	12 VDC Input	9.0	12.0	18.0	
	24 VDC Input	18.0	24.0	36.0	
	48 VDC Input	36.0	48.0	72.0	
Input Filter	LC Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy	Positive		±1.0	±3.0	%
	Negative		±3.0	±5.0	
Output Voltage Balance	Dual Output , Balanced Loads			±1.0	%
Line Regulation	Vin = Min to Max		±0.2	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.5	±1.0	
Ripple (20 MHz)	See Note 1		20	50	mV P - P
Noise (20 MHz)	See Note 1		50	100	mV P - P
Output Power Protection		120			%
Temperature Coefficient			±0.02		%/°C
Output Short Circuit	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		100		pF
Switching Frequency			300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.00 x 1.00 x 0.394 Inches (25.4 x 25.4 x 10.0 mm)				
Case Material	Metal With Non-Conductive Base (UL94-V0)				
Weight	0.52 Oz (15g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.0			MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
	5 VDC Input	-0.7		11.0	VDC
	12 VDC Input	-0.7		20.0	
	24 VDC Input	-0.7		40.0	
	48 VDC Input	-0.7		80.0	
Lead Temperature	1.5 mm From Case For 10 Sec			300	°C
Internal Power Dissipation	All Models			450	mW

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

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Model Number	Input				Output			Capacitive Load (μ F Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
I602ERW	5	4.5 - 9.0	1,579	35	5.0	1,200	120	1,000	76	700
I603ERW	5	4.5 - 9.0	1,500	35	12.0	500	50	680	80	700
I604ERW	5	4.5 - 9.0	1,460	35	15.0	400	40	330	82	700
I606ERW	5	4.5 - 9.0	1,579	35	\pm 5.0	\pm 600	\pm 60	680	76	700
I607ERW	5	4.5 - 9.0	1,500	35	\pm 12.0	\pm 250	\pm 25	330	80	700
I608ERW	5	4.5 - 9.0	1,460	35	\pm 15.0	\pm 200	\pm 20	220	82	700
I612ERW	12	9.0 - 18.0	633	25	5.0	1,200	120	1,000	79	350
I613ERW	12	9.0 - 18.0	610	25	12.0	500	50	680	82	350
I614ERW	12	9.0 - 18.0	595	25	15.0	400	40	330	84	350
I615ERW	12	9.0 - 18.0	610	25	24.0	250	25	220	82	350
I616ERW	12	9.0 - 18.0	633	25	\pm 5.0	\pm 600	\pm 60	680	79	350
I617ERW	12	9.0 - 18.0	610	25	\pm 12.0	\pm 250	\pm 25	330	82	350
I618ERW	12	9.0 - 18.0	595	25	\pm 15.0	\pm 200	\pm 20	220	84	350
I621ERW	24	18.0 - 36.0	320	12.5	3.3	1,500	150	2,200	78	700
I622ERW	24	18.0 - 36.0	312	12.5	5.0	1,200	120	1,000	80	700
I623ERW	24	18.0 - 36.0	297	12.5	12.0	500	50	680	84	700
I624ERW	24	18.0 - 36.0	291	12.5	15.0	400	40	330	86	700
I625ERW	48	18.0 - 36.0	294	12.5	24.0	250	25	220	85	350
I626ERW	24	18.0 - 36.0	309	12.5	\pm 5.0	\pm 600	\pm 60	680	81	700
I627ERW	24	18.0 - 36.0	297	12.5	\pm 12.0	\pm 250	\pm 25	330	84	700
I628ERW	24	18.0 - 36.0	291	12.5	\pm 15.0	\pm 200	\pm 20	220	86	700
I631ERW	48	36.0 - 72.0	160	6.5	3.3	1,500	150	2,200	78	350
I632ERW	48	36.0 - 72.0	156	6.5	5.0	1,200	120	1,000	80	350
I633ERW	48	36.0 - 72.0	149	6.5	12.0	500	50	680	84	350
I634ERW	48	36.0 - 72.0	145	6.5	15.0	400	40	330	86	350
I636ERW	48	36.0 - 72.0	156	6.5	\pm 5.0	\pm 600	\pm 60	680	80	350
I637ERW	48	36.0 - 72.0	149	6.5	\pm 12.0	\pm 250	\pm 25	330	84	350
I638ERW	48	36.0 - 72.0	145	6.5	\pm 15.0	\pm 200	\pm 20	220	86	350

Notes:

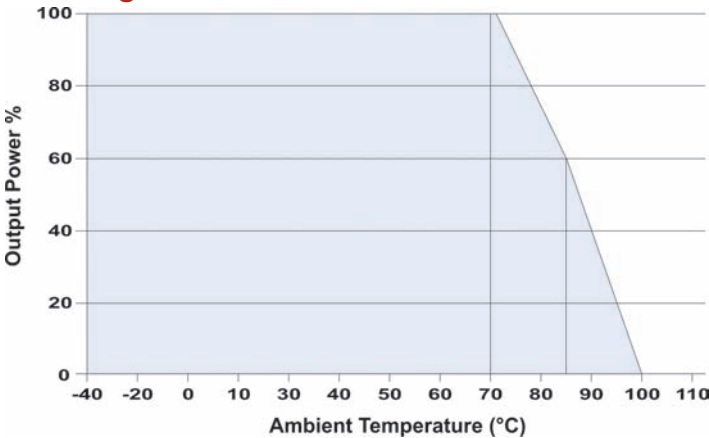
- When measuring output ripple, it is recommended that an external ceramic capacitor (approx 1 μ F to 10 μ F) be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units.
- These units should not be used with a load under 10% of full load. Operation at no-load may damage the unit.
- These converters are specified for operation without external components. However, in some applications the addition of input/output capacitors will enhance stability and reduce output ripple. Recommended capacitor values are:

Vin	Input Capacitor	Vout	Output Capacitor
5 VDC	100 μ F	3.3 VDC	10 μ F /0.1A
12 VDC	100 μ F	5.0 VDC	10 μ F /0.1A
24 VDC	10 μ F - 47 μ F	12.0 VDC	10 μ F /0.1A
48 VDC	10 μ F - 47 μ F	15.0 VDC	10 μ F /0.1A
		24.0 VDC	10 μ F /0.1A

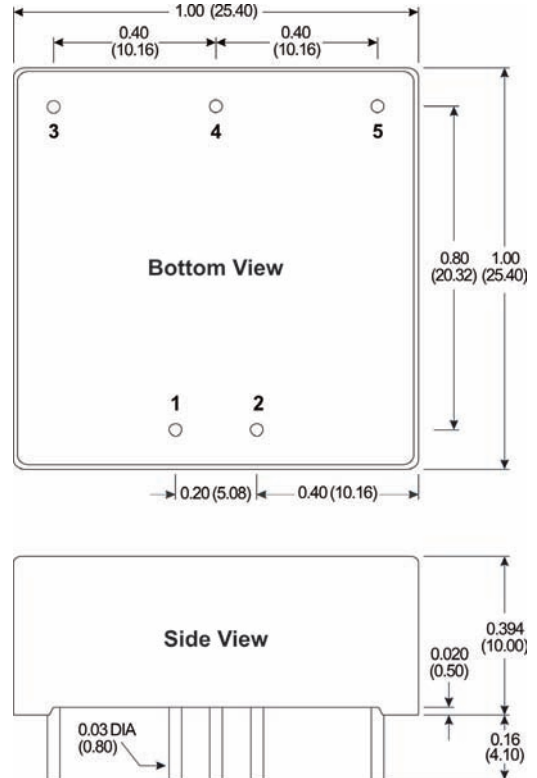
For applications requiring very low output noise levels, a simple LC filter should be effective.

- Dual output units may be connected to provide a 10V, 24V, or 30VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection table above for the correct rating.

Derating Curve



Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = \pm 0.01 (\pm 0.25)
- Pin 1 is marked by a "dot" on the top of the unit

Pin Connections

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	No Pin	Common
5	-Vout	-Vout



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