

# 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
- 28 Standard Models
- **LOW COST!!**



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### 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	
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	Aluminum (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
Input Voltage Surge (1Sec)	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

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 (µF 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	±5.0	±600	±60	680	76	700
I607ERW	5	4.5 - 9.0	1,500	35	±12.0	±250	±25	330	80	700
I608ERW	5	4.5 - 9.0	1,460	35	±15.0	±200	±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	±5.0	±600	±60	680	79	350
I617ERW	12	9.0 - 18.0	610	25	±12.0	±250	±25	330	82	350
I618ERW	12	9.0 - 18.0	595	25	±15.0	±200	±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	24	18.0 - 36.0	294	12.5	24.0	250	25	220	85	350
I626ERW	24	18.0 - 36.0	309	12.5	±5.0	±600	±60	680	81	700
I627ERW	24	18.0 - 36.0	297	12.5	±12.0	±250	±25	330	84	700
I628ERW	24	18.0 - 36.0	291	12.5	±15.0	±200	±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	±5.0	±600	±60	680	80	350
I637ERW	48	36.0 - 72.0	149	6.5	±12.0	±250	±25	330	84	350
I638ERW	48	36.0 - 72.0	145	6.5	±15.0	±200	±20	220	86	350

Notes:

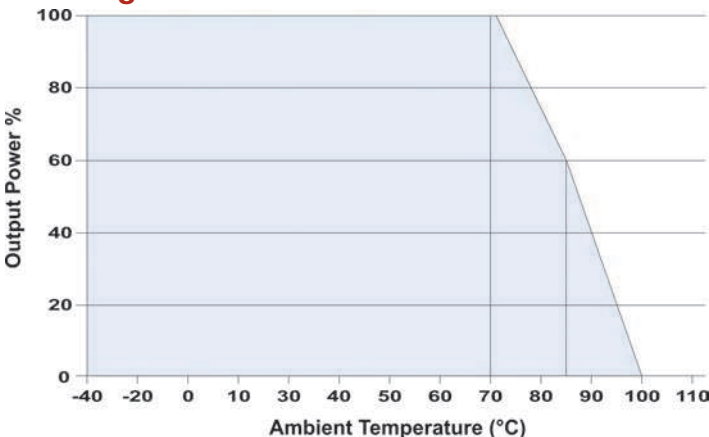
- When measuring output ripple, it is recommended that an external ceramic capacitor (approx 1 µF to 10 µF) be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units.
- These units should not be used with a load under 10% of full load. 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 µF	3.3 VDC	10 µF /0.1A
12 VDC	100 µF	5.0 VDC	10 µF /0.1A
24 VDC	10 µF - 47 µF	12.0 VDC	10 µF /0.1A
48 VDC	10 µF - 47 µF	15.0 VDC	10 µF /0.1A
		24.0 VDC	10 µF /0.1A

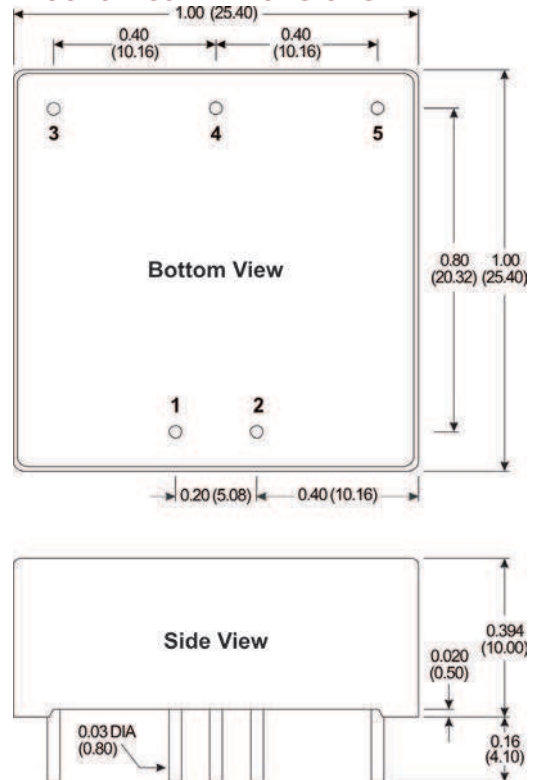
For applications requiring very low output noise levels, a simple LC filter should be effective.

- 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 = ±0.01 (±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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