

# A500ERW Series

## Low Cost, Wide Input, 5W Single & Dual Output DC/DC Converters



### Key Features:

- 5W Output Power
- 2:1 Input Voltage Range
- 1,500 VDC Isolation
- Compact DIP Case
- Single & Dual Outputs
- 1.0 MH MTBF
- Industry Standard Pin-Out
- Low Cost



RoHS Compliant

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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 Start Voltage	12 VDC Input	4.5	6.0	8.0	VDC
	24 VDC Input	8.0	12.0	16.0	
Input Filter	$\pi$ (Pi) Filter				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power			1,000	3,000	mW

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±0.5	±2.0	%
Line Regulation	Vin = Min to Max		±0.1	±0.3	%
Load Regulation	Iout = 20% to 100%		±0.3	±1.0	%
Ripple & Noise (20 MHz) (Note 1)			50	75	mV P - P
Ripple & Noise (20 MHz)	Over Line, Load & Temp.			100	mV P - P
Ripple & Noise (20 MHz)				15	mV rms
Output Power Protection		120			%
Transient Recovery Time (Note 2)	25% Load Step Change		150	300	µSec
Transient Response Deviation			±2.0	±6.0	%
Temperature Coefficient			±0.01	±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		380	500	pF
Switching Frequency			300		kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+71	°C
Operating Temperature Range	Case	-40		+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	1.25 x 0.80 x 0.40 Inches (31.8 x 20.3 x 10.2 mm)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.60 Oz (17g)				

#### 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 (1 Sec)	12 VDC Input	-0.7		25.0	VDC
	24 VDC Input	-0.7		50.0	
Lead Temperature	1.5mm From Case For 10 Sec			260	°C
Internal Power Dissipation	All Models			2,500	mW

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

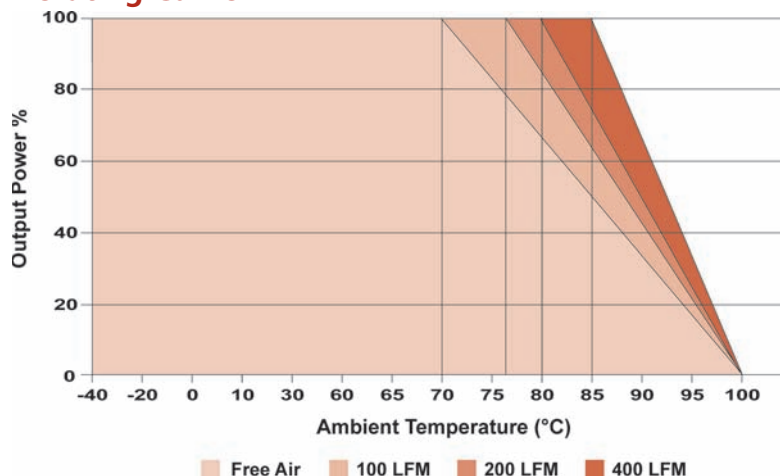
## Model Selection Guide

Model Number	Input					Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Reflected Ripple Current (mA, Typ)	Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load						
A501ERW	12	9.0 - 18.0	429	20	25	3.3	1,200.0	60.0	77	1,500
A502ERW	12	9.0 - 18.0	514	20	25	5.0	1,000.0	50.0	81	1,500
A503ERW	12	9.0 - 18.0	595	20	25	12.0	500.0	25.0	84	1,500
A504ERW	12	9.0 - 18.0	595	20	25	±12.0	±250.0	±12.5	84	1,500
A505ERW	12	9.0 - 18.0	595	20	25	±15.0	±200.0	±10.0	84	1,500
A511ERW	24	18.0 - 36.0	209	5	15	3.3	1,200.0	60.0	79	700
A512ERW	24	18.0 - 36.0	251	5	15	5.0	1,000.0	50.0	83	700
A513ERW	24	18.0 - 36.0	291	5	15	12.0	500.0	25.0	86	700
A514ERW	24	18.0 - 36.0	291	5	15	±12.0	±250.0	±12.5	86	700
A515ERW	24	18.0 - 36.0	291	5	15	±15.0	±200.0	±10.0	86	700

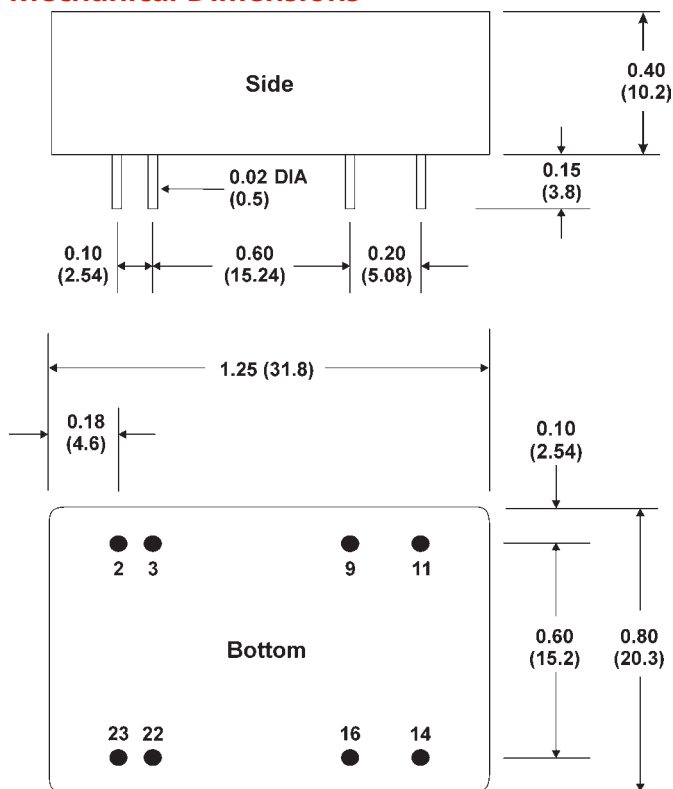
### Notes:

- When measuring output ripple, it is recommended that an external 0.47  $\mu$ F ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. For noise sensitive applications, the use of 3.3  $\mu$ F capacitors will reduce the output ripple.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- Operation at no-load will not damage these units. However, they may not meet all specifications.
- Dual output units may be connected to provide a 10 VDC, 24 VDC or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- The converter should be connected to a low ac-impedance source. An input source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up. In this case, it is recommended that a low ESR (ESR <1.0 $\Omega$  at 100 kHz) capacitor be mounted close to the converter. For 12V input units a 3.3  $\mu$ F is recommended and for 24V units a 2.2  $\mu$ F.
- It is recommended that a fuse be used on the input of a power supply for protection. See the table above for the correct rating.

## Derating Curve



## Mechanical Dimensions



## Pin Connections

Pin	Single	Dual
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

NC: No Connection

## Capacitive Load

Single Output $\mu$ F Max	Dual Output $\mu$ F Max
6,800	±1,000

### Mechanical Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )



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