

# A500RU Series

## Single & Dual Output, 5W Ultra-Wide Input Range DC/DC Converters



### Key Features:

- 5W Output Power
- 4:1 Input Voltage Range
- 1,500 VDC Isolation
- Meets EN55022 Class "A"
- Compact DIP Case
- Single & Dual Outputs
- 1.0 MH MTBF
- Industry Standard Pin-Out



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	24 VDC Input	7.0	8.0	9.0	VDC
	48 VDC Input	14.0	16.0	18.0	
Input Filter	π (Pi) Filter (Complies with EN55022 Class "A")				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power				2,500	mW

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±0.5	±1.0	%
Line Regulation	Vin = Min to Max		±0.1	±0.3	%
Load Regulation	Iout = 10% 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		110		350	%
Transient Recovery Time (Note 2)	25% Load Step Change		250	500	μSec
Transient Response Deviation			±3.0		%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

#### 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		350	550	pF
Switching Frequency			340		kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40		+71	°C
Operating Temperature Range	Case	-40		+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing		90		%
RFI	Six-Side Shielded Metal Case				
Conducted EMI	EN55022 Class "A"				

#### Physical

Case Size	1.25 x 0.80 x 0.40 Inches (31.8 x 20.3 x 10.2 mm)
Case Material	Metal With Non-Conductive Base
Weight	0.49 Oz (14g)

#### 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)	24 VDC Input	-0.7		50.0	VDC
	48 VDC Input	-0.7		100.0	
Lead Temperature	1.5 mm 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.

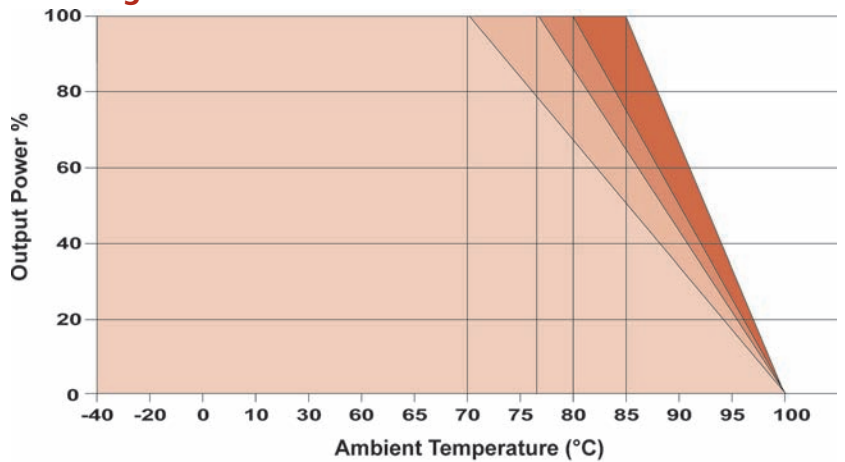
## Model Selection Guide

Model Number	Input				Reflected Ripple Current (mA, Typ)	Output			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						
A501RU	24	9.0 - 36.0	212	20	10	3.3	1,200	120.0	78	1,500
A502RU	24	9.0 - 36.0	257	20	10	5.0	1,000	100.0	81	1,500
A503RU	24	9.0 - 36.0	291	20	10	12.0	500	50.0	86	1,500
A504RU	24	9.0 - 36.0	294	20	10	15.0	400	40.0	85	1,500
A505RU	24	9.0 - 36.0	257	20	10	±5.0	±500	±50.0	81	1,500
A506RU	24	9.0 - 36.0	291	20	10	±12.0	±250	±25.0	86	1,500
A507RU	24	9.0 - 36.0	294	20	10	±15.0	±200	±20.0	85	1,500
A511RU	48	18.0 - 75.0	106	10	10	3.3	1,200	120.0	78	750
A512RU	48	18.0 - 75.0	129	10	10	5.0	1,000	100.0	81	750
A513RU	48	18.0 - 75.0	145	10	10	12.0	500	50.0	86	750
A514RU	48	18.0 - 75.0	147	10	10	15.0	400	40.0	85	750
A515RU	48	18.0 - 75.0	123	10	10	±5.0	±500	±50.0	81	750
A516RU	48	18.0 - 75.0	145	10	10	±12.0	±250	±25.0	86	750
A517RU	48	18.0 - 75.0	147	10	10	±15.0	±200	±20.0	85	750

### Notes:

- When measuring output ripple, it is recommended that an external 0.47  $\mu\text{F}$  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  $\mu\text{F}$  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, 24 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 converter stability. 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 24V input units a 4.7  $\mu\text{F}$  is recommended and for 48V units a 2.2  $\mu\text{F}$ .
- It is always 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



## Pin Connections

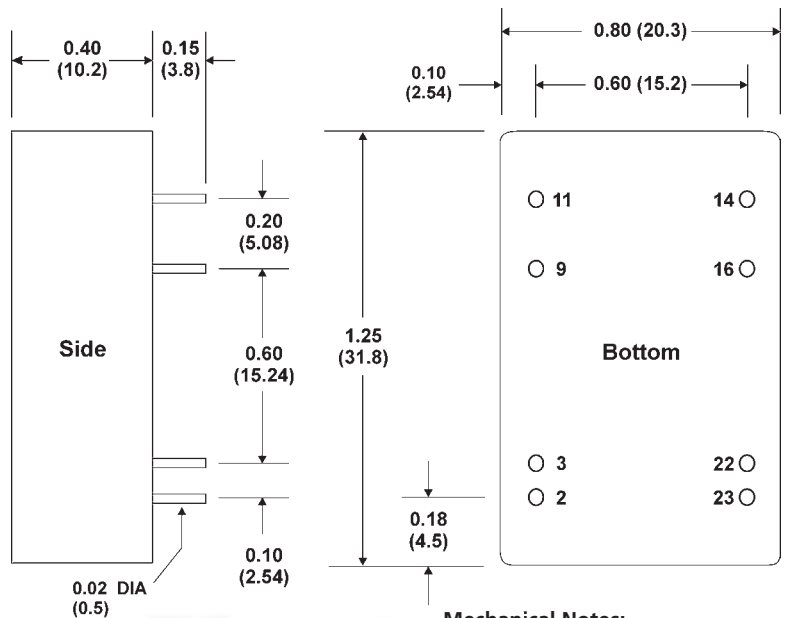
Pin	Single	Dual
2, 3	-Vin	-Vin
9	No Pin	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22, 23	+Vin	+Vin

NC: No Connection

## Capacitive Load

Single Output $\mu\text{F}$ Max	Dual Output $\mu\text{F}$ Max
3,000	±680

## Mechanical Dimensions



### Mechanical Notes:

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



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