

A1500RU Series

4:1 Input Range, 15W Single & Dual Output DC/DC Converters



Key Features:

- 15W Output Power
- 4:1 Input Voltage Range
- Compact DIP Case
- 1,600 VDC I/O Isolation
- Meets EN 55022 "A"
- Single & Dual Outputs
- 37.5 W/IN³ Power Density
- Industry Standard Pin-Out



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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	24 VDC Input	9.0	24.0	36.0	VDC
	48 VDC Input	18.0	48.0	75.0	
Input Filter	π (Pi) Filter (Meets EN 55022 Class “A”)				
Input Reflected Ripple Current			20.0		mA P - P

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0		%
Line Regulation, V_{IN} = Min to Max	Single Output			±0.2	%
	Dual Output			±0.5	
Load Regulation, I_{OUT} = 0% to 100%	Single Output			±0.5	%
	Dual Output			±1.0	
Cross Regulation, Dual Output	See Note 1			±5.0	%
Ripple & Noise (20 MHz)	See Note 2			60	mV P - P
Output Power Protection			150		% I_{OUT}
Transient Recovery Time, See Note 3	25% Load Step Change		250		μ Sec
Transient Response Deviation			±3.0		%
Temperature Coefficient			±0.02		%/°C
Output Short Circuit Protection	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage (Input/Output)	3 Seconds	1,600			VDC
Isolation Voltage (Case/Input, Output)	3 Seconds	1,600			
Isolation Resistance	500 VDC	1,000			M Ω
Isolation Capacitance	100 kHz/1V		2,000		pF
Switching Frequency		250		330	kHz

EMI Characteristics

Parameter	Standard	Level
Radiated Emissions	EN 55022	Class A
Conducted Emissions	EN 55022	Class A
ESD	EN 61000-4-2	Criteria B
RS	EN 61000-4-3	Criteria A
EFT, See Note 4	EN 61000-4-4	Criteria B
Surge, See Note 4	EN 61000-4-5	Criteria B
CS	EN 61000-4-6	Criteria A
PFMF	EN 61000-4-8	Criteria A

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40		+85	°C
Operating Temperature Range	Case			+105	°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	Metal with Non-Conductive Base (UL94V-0)
Weight	0.705 Oz (20g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	410			kHours

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

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

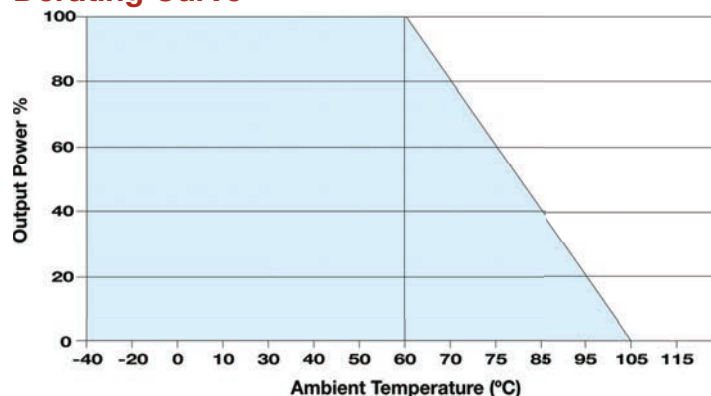
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Model Number	Input				Output			Over Voltage Protection (VDC)	Max Capacitive Load (μF Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)				
	Nominal	Range	Full-Load	No-Load							
A1501RU	24	9.0 - 36.0	647	10	3.3	4,000	0.0	3.9	4,700	87	3,000
A1502RU	24	9.0 - 36.0	732	10	5.1	3,000	0.0	6.2	3,300	89	3,000
A1503RU	24	9.0 - 36.0	710	10	12.0	1,250	0.0	15.0	600	90	3,000
A1504RU	24	9.0 - 36.0	710	10	15.0	1,000	0.0	18.0	400	90	3,000
A1505RU	24	9.0 - 36.0	744	10	±5.0	±1,500	±0.0	±6.2	±1,500	86	3,000
A1506RU	24	9.0 - 36.0	718	10	±12.0	±625	±0.0	±15.0	±288	89	3,000
A1507RU	24	9.0 - 36.0	710	10	±15.0	±500	±0.0	±18.0	±200	90	3,000
A1511RU	48	18.0 - 75.0	327	5	3.3	4,000	0.0	3.9	4,700	86	1,500
A1512RU	48	18.0 - 75.0	370	5	5.1	3,000	0.0	6.2	3,300	88	1,500
A1513RU	48	18.0 - 75.0	355	5	12.0	1,250	0.0	15.0	600	90	1,500
A1514RU	48	18.0 - 75.0	359	5	15.0	1,000	0.0	18.0	400	89	1,500
A1515RU	48	18.0 - 75.0	372	5	±5.0	±1,500	±0.0	±6.2	±1,500	86	1,500
A1516RU	48	18.0 - 75.0	359	5	±12.0	±625	±0.0	±15.0	±288	89	1,500
A1517RU	48	18.0 - 75.0	355	5	±15.0	±500	±0.0	±18.0	±200	90	1,500

Notes:

- When measuring cross regulation, the load on one output is varied from 25% to 100% while the other output is held at 100%.
- When measuring output ripple, it is recommended that an external 1.0 μ 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 μ 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 50% to 25%.
- To meet the requirements of EN 61000-4-4 and EN 61000-4-5, an external filter capacitor is required. It is recommended that a 680 μ F/100V (or two 330 μ F/100V capacitors connected in parallel) be used.
- 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.
- 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



Remote ON/OFF

Parameter	Min	Max	Units
Supply On	3.0	12 or Open	VDC
Supply Off	0.0	1.2	VDC
Standby Input Current		5 mA Typical	
Control Common		Referenced to Neg. Input (pin 2,3)	

Pin Connections

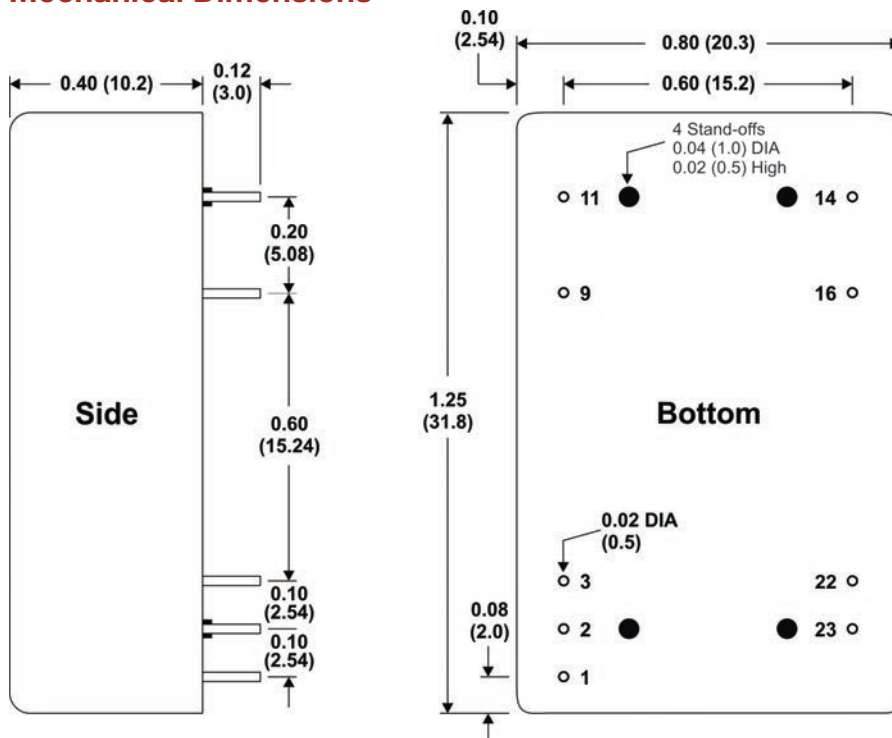
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-VIN	-VIN
3	-VIN	-VIN
9	No Pin	Common
11	NC	-VOUT
14	+VOUT	+VOUT
16	-VOUT	Common
22	+VIN	+VIN
23	+VIN	+VIN

NC: No Connection

Mechanical Notes:

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

Mechanical Dimensions



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