

# B1500RU Series



## Ultra-Wide Input 15W Single & Dual Output DC/DC Converters

### Key Features:

- 15W Output Power
- 4:1 Input Voltage Range
- 1,500 VDC Isolation
- Compact 1 x 2 Inch Case
- Single & Dual Outputs
- Optional Remote ON/OFF
- 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 Start Voltage	24 VDC Input	8.0	8.5	9.0	VDC	
	48 VDC Input	15.0	17.0	18.0		
Input Filter	π (Pi) Filter (Complies with EN55022 Class "A")					
Reverse Polarity Input Current				1.0	A	
Short Circuit Input Power				3,500	mW	
Output						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Output Voltage Accuracy			±1.0	±2.0	%	
Output Voltage Balance	Dual Output , Balanced Loads		±0.5	±2.0	%	
Line Regulation	Vin = Min to Max		±0.1	±0.5	%	
Load Regulation	Iout = 10% to 100%		±0.5	±1.0	%	
Ripple & Noise (20 MHz) (Note 1)			55	80	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		300	500	µSec	
Transient Response Deviation			±2.0	±4.0	%	
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 Test Voltage	Flash Tested For 1 Sec	1,650			VDC	
Isolation Resistance	500 VDC	1,000			MΩ	
Isolation Capacitance	100 kHz, 1V		1,200	1,500	pF	
Switching Frequency		290	330	400	kHz	
Remote On/Off (Note 3)						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Supply On		2.5		5.5	VDC	
Supply Off		-0.7		0.8	VDC	
Standby Input Current				10	mA	
Control Common		Referenced to Negative Input (pin 2)				
Environmental						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Operating Temperature Range	Ambient	-40	+25	+60	°C	
Operating Temperature Range	Case			+100	°C	
Storage Temperature Range		-50		+125	°C	
Cooling	Free Air Convection (See Curves on Page 2)					
Humidity	RH, Non-condensing			95	%	
RFI	Six-Side Shielded Metal Case					
Physical						
Case Size	2.0 x 1.0 x 0.40 Inches (50.8 x 25.4 x 10.2 mm)					
Case Material	Metal with Non-Conductive Base					
Weight	1.13 Oz (32g)					
Reliability Specifications						
Parameter	Conditions	Min.	Typ.	Max.	Units	
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	700			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			260.0	°C	
Internal Power Dissipation	All Models			5,000	mW	

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

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Model Number	Input				Reflected Ripple Current (mA, Typ)	Output			Efficiency (% , Typ)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)			Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load							
B1501RU	24	9.0 - 36.0	528	25	40	3.3	3,000	300.0	78	470	2,500
B1502RU	24	9.0 - 36.0	762	25	40	5.0	3,000	300.0	82	470	2,500
B1503RU	24	9.0 - 36.0	735	25	40	12.0	1,250	125.0	85	470	2,500
B1504RU	24	9.0 - 36.0	726	25	40	15.0	1,000	100.0	86	470	2,500
B1505RU	24	9.0 - 36.0	753	25	40	±5.0	±1,500	±150.0	81	±220	2,500
B1506RU	24	9.0 - 36.0	735	25	40	±12.0	±625	±62.5	85	±220	2,500
B1507RU	24	9.0 - 36.0	726	25	40	±15.0	±500	±50.0	86	±220	2,500
B1511RU	48	18.0 - 75.0	264	15	30	3.3	3,000	300.0	78	470	1,250
B1512RU	48	18.0 - 75.0	381	15	30	5.0	3,000	300.0	82	470	1,250
B1513RU	48	18.0 - 75.0	368	15	30	12.0	1,250	125.0	85	470	1,250
B1514RU	48	18.0 - 75.0	363	15	30	15.0	1,000	100.0	86	470	1,250
B1515RU	48	18.0 - 75.0	376	15	30	±5.0	±1,500	±150.0	81	±220	1,250
B1516RU	48	18.0 - 75.0	368	15	30	±12.0	±625	±62.5	85	±220	1,250
B1517RU	48	18.0 - 75.0	363	15	30	±15.0	±500	±50.0	86	±220	1,250

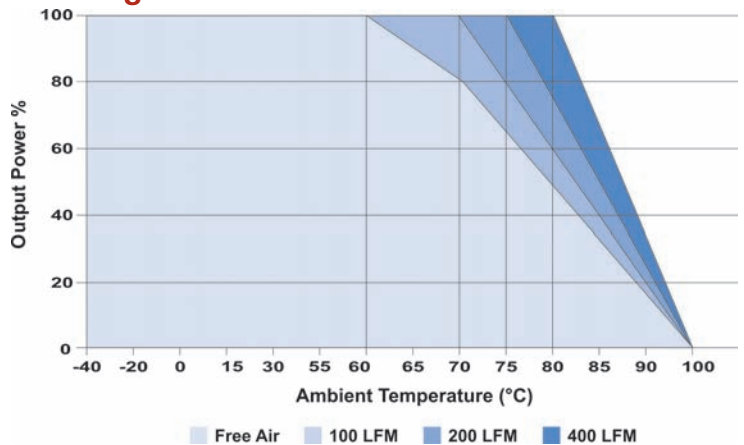
For heatsink option, add suffix "H" to model number (i.e. B1503RU-H)

For Remote Control option, add suffix "R" to model number (i.e. B1503RU-R)

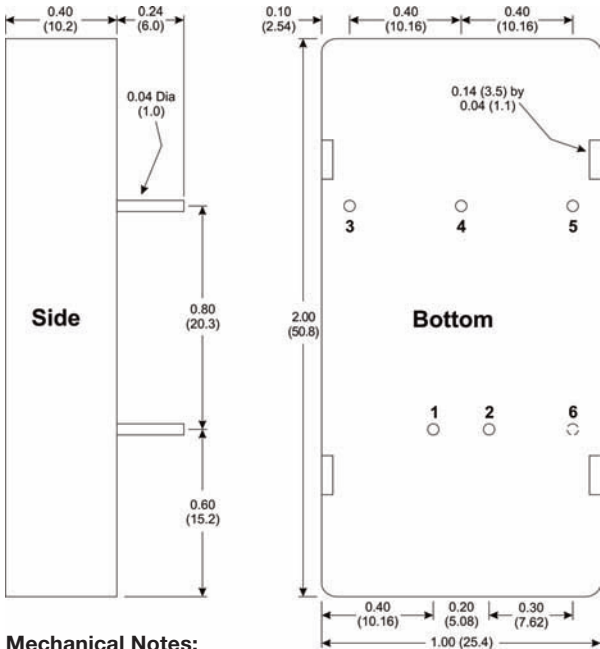
**Notes:**

- When measuring output ripple, it is recommended that an external 4.7 µF 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.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- The maximum control current at the on/off pin (pin 6) during a logic high is 50 µA. The maximum control current to the on/off pin at logic low (-0.7V to 0.8V) is 1 mA. If the on/off pin is left open, the unit operates. If it is grounded, the unit will shut off.
- 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 Equivalent Series Resistance (ESR <1.0Ω at 100 kHz) capacitor be mounted close to the converter. A 10.0 µF is recommended.
- 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**



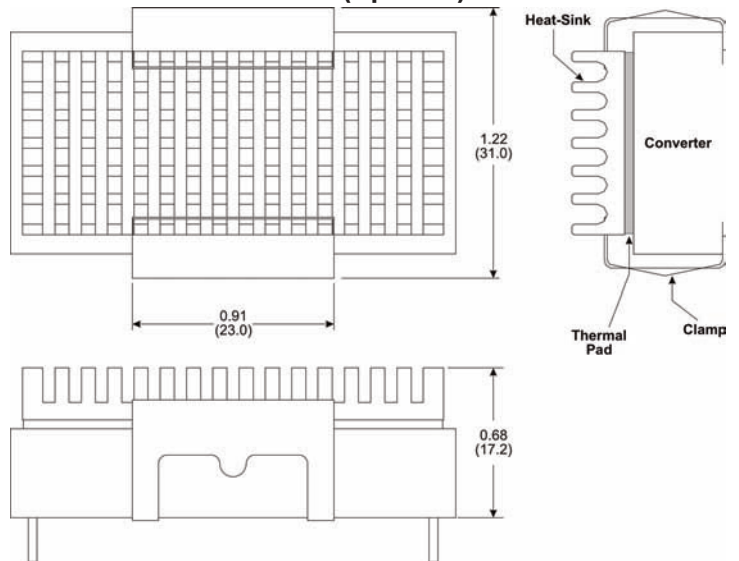
**Mechanical Notes:**

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

**Pin Connections**

Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	No Pin	Comm.
2	-Vin	-Vin	5	-Vout	-Vout
3	+Vout	+Vout	6	ON/OFF	ON/OFF

**Heatsink Dimensions (Optional)**



**Heatsink Notes:**

- Use of the heatsink will extend the units operating temperature range by approximately 10°C.
- The heatsink is black anodized aluminum.



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