

# B1500ERU 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
- 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		8.8	9.0	VDC
	48 VDC Input		17.8	18.0	
Input Filter	π (Pi) Filter				
Start-Up Time			10		mS

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0	±2.0	%
Output Voltage Balance	Dual Output , Balanced Loads		±0.5		%
Line Regulation	Vin = Min to Max		±0.2	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.5	±1.0	%
Cross Regulation				±5.0	%
Ripple & Noise (20 MHz) (Note 1)		55	75	150	mV P - P
Output Power Protection		120		150	%
Transient Recovery Time (Note 2)	25% Load Step Change		200	300	μSec
Transient Response Deviation			±3.0	±5.0	%
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		1,000		pF
Switching Frequency			300		kHz

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Storage Temperature Range		-55		+105	°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 0.43 Inches (50.8 x 25.4 x 11.0 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			300.0	°C

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

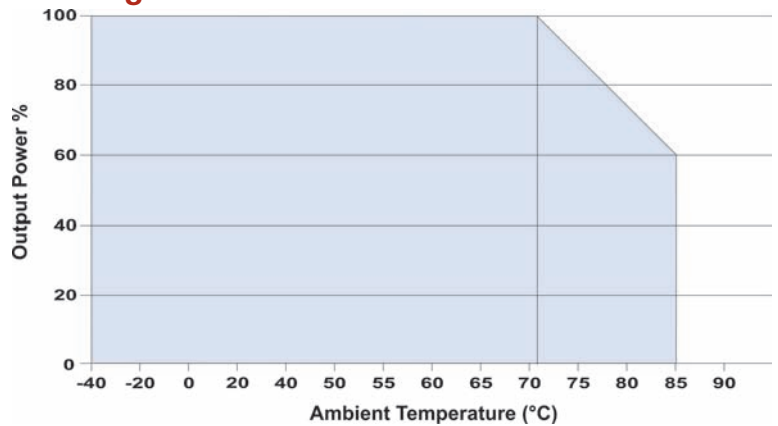
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Model Number	Input				Reflected Ripple Current (mA, Typ)	Output			Efficiency (% , Typ)	Capacitive Load (µF Max)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)			Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load							
B1501ERU	24	9.0 - 36.0	528	25	40	3.3	4,000	400.0	78	10,200	2,500
B1502ERU	24	9.0 - 36.0	762	25	40	5.0	3,000	300.0	82	4,020	2,500
B1503ERU	24	9.0 - 36.0	744	25	40	12.0	1,250	125.0	84	1,035	2,500
B1504ERU	24	9.0 - 36.0	744	25	40	15.0	1,000	100.0	84	705	2,500
B1505ERU	24	9.0 - 36.0	762	25	40	±5.0	±1,500	±150.0	82	±1,020	2,500
B1506ERU	24	9.0 - 36.0	735	25	40	±12.0	±625	±62.5	85	±495	2,500
B1507ERU	24	9.0 - 36.0	735	25	40	±15.0	±500	±50.0	85	±165	2,500
B1511ERU	48	18.0 - 75.0	264	15	30	3.3	4,000	400.0	78	10,200	1,250
B1512ERU	48	18.0 - 75.0	381	15	30	5.0	3,000	300.0	82	4,020	1,250
B1513ERU	48	18.0 - 75.0	372	15	30	12.0	1,250	125.0	84	1,035	1,250
B1514ERU	48	18.0 - 75.0	372	15	30	15.0	1,000	100.0	84	705	1,250
B1515ERU	48	18.0 - 75.0	381	15	30	±5.0	±1,500	±150.0	82	±1,020	1,250
B1516ERU	48	18.0 - 75.0	368	15	30	±12.0	±625	±62.5	85	±495	1,250
B1517ERU	48	18.0 - 75.0	368	15	30	±15.0	±500	±50.0	85	±165	1,250

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.
- 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 100 µF for C<sub>IN</sub> and 100 - 220 µF for C<sub>OUT</sub>.
- 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.
- 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

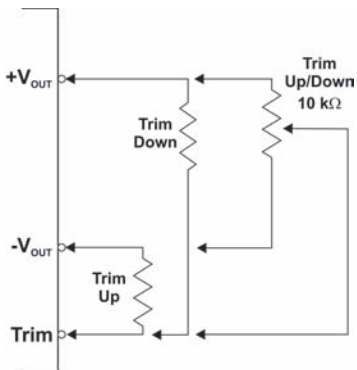
Parameter	Min	Max	Units
Supply On	3.5	12.0 or Open	VDC
Supply Off	Grnd	1.2	VDC

Control Common Referenced to Gnd

Remote ON/OFF Notes:

- Maximum sink current at the on/off pin (pin 6) during a logic low is 100 µA.
- Maximum allowable leakage current of a switch connected to the on/off terminal (Pin 6) at logic high (2.5V to 100V) is 5 µA.

External Trim

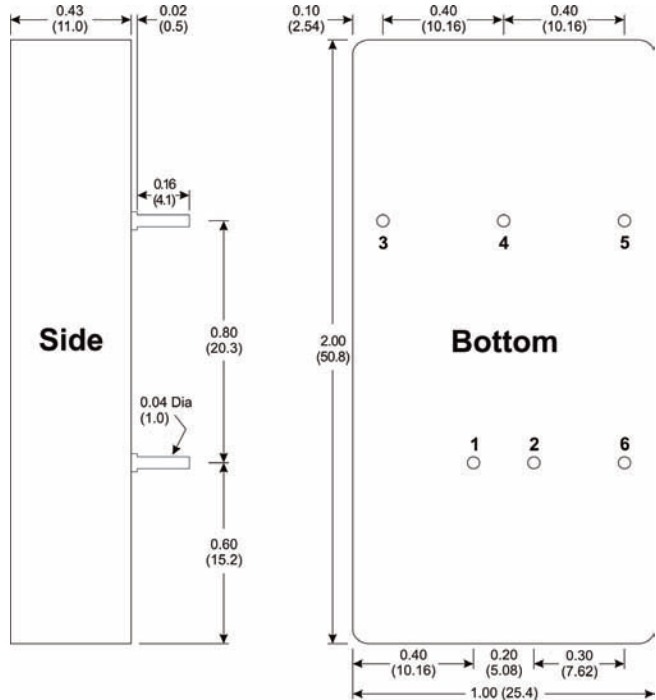


A simple external circuit may be used to adjust the converter output (single output models only). To adjust the output DOWN, connect a 5%, 3W resistor between the plus output pin and the Vout trim pin. To adjust the output UP, connect a 5%, 3W resistor between the minus output pin and the Vout trim pin.

For UP/Down trimming capability, connect a 10 kW potentiometer between the plus and minus outputs with the wiper arm connected to the Vout trim pin.

The trim range is ±10%.

Mechanical Dimensions



Pin Connections

Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	4	Trim	Comm.
2	-Vin	-Vin	5	-Vout	-Vout
3	+Vout	+Vout	6	ON/OFF	ON/OFF

Mechanical Notes:

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



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