

# B1500RW Series



## Compact 1 x 2 Inch 15W Wide Input Range DC/DC Converters

### Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

### Key Features:

- 15W Output Power
- 2:1 Input Voltage Range
- 1,500 VDC Isolation
- Compact 1 x 2 Inch Case
- Single & Dual Outputs
- Optional Remote ON/OFF
- Industry Standard Pin-Out



#### Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Start Voltage	12 VDC Input	8.6	8.8	9.0	VDC
	24 VDC Input	15.0	17.0	18.0	
	48 VDC Input	30.0	33.0	36.0	
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%		±0.1	±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				
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	1.06 Oz (30g)				

#### 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)	12 VDC Input	-0.7		25.0	VDC
	24 VDC Input	-0.7		50.0	
	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			Over Voltage Protection (VDC)	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								
B1501RW	12	9.0 - 18.0	1,056	30	50	3.3	3,000.0	300.0	3.9	78	470	3,000
B1502RW	12	9.0 - 18.0	1,543	30	50	5.0	3,000.0	300.0	6.8	81	470	3,000
B1503RW	12	9.0 - 18.0	1,452	30	50	12.0	1,250.0	125.0	15.0	86	470	3,000
B1504RW	12	9.0 - 18.0	1,452	30	50	15.0	1,000.0	100.0	18.0	86	470	3,000
B1505RW	12	9.0 - 18.0	1,452	30	50	±12.0	±625.0	±62.5	±15.0	86	±220	3,000
B1506RW	12	9.0 - 18.0	1,452	30	50	±15.0	±500.0	±50.0	±18.0	86	±220	3,000
B1511RW	24	18.0 - 36.0	528	17	40	3.3	3,000.0	300.0	3.9	78	470	1,500
B1512RW	24	18.0 - 36.0	772	17	40	5.0	3,000.0	300.0	6.8	81	470	1,500
B1513RW	24	18.0 - 36.0	726	17	40	12.0	1,250.0	125.0	15.0	86	470	1,500
B1514RW	24	18.0 - 36.0	726	17	40	15.0	1,000.0	100.0	18.0	86	470	1,500
B1515RW	24	18.0 - 36.0	726	17	40	±12.0	±625.0	±62.5	±15.0	86	±220	1,500
B1516RW	24	18.0 - 36.0	726	17	40	±15.0	±500.0	±50.0	±18.0	86	±220	1,500
B1521RW	48	36.0 - 75.0	264	10	30	3.3	3,000.0	300.0	3.9	78	470	750
B1522RW	48	36.0 - 75.0	385	10	30	5.0	3,000.0	300.0	6.8	81	470	750
B1523RW	48	36.0 - 75.0	363	10	30	12.0	1,250.0	125.0	15.0	86	470	750
B1524RW	48	36.0 - 75.0	363	10	30	15.0	1,000.0	100.0	18.0	86	470	750
B1525RW	48	36.0 - 75.0	363	10	30	±12.0	±625.0	±62.5	±15.0	86	±220	750
B1526RW	48	36.0 - 75.0	363	10	30	±15.0	±500.0	±50.0	±18.0	86	±220	750

For Class "A" filter option, add suffix "F" to model number (i.e. B1503RW-F)

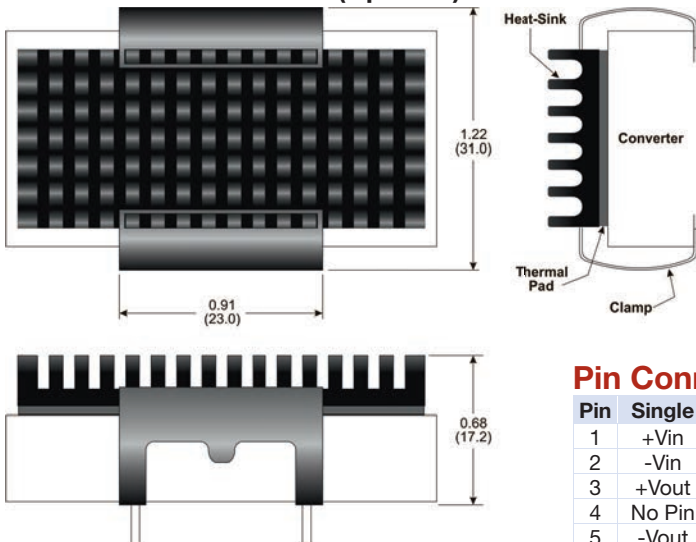
For heatsink option, add suffix "H" to model number (i.e. B1503RW-H)

For Remote Control option, add suffix "R" to model number (i.e. B1503RW-R)

**Notes:**

1. An internal filter that complies with EN55022 Class "A" is available. Add a suffix "-F" to the model number.
2. 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.
3. Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
4. 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 is -1 mA. If the on/off pin is left open, the unit operates. If it is grounded, the unit will shut off.
5. Operation at no-load will not damage these units. However, they may not meet all specifications.
6. 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.
7. 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.
8. 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.

**Heatsink Dimensions (Optional)**



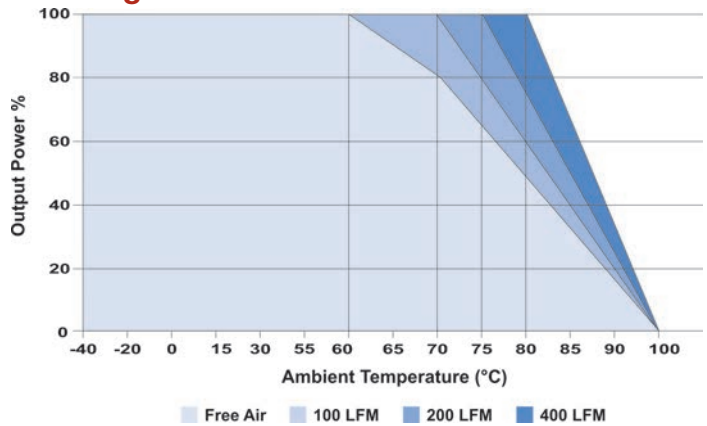
**Pin Connections**

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

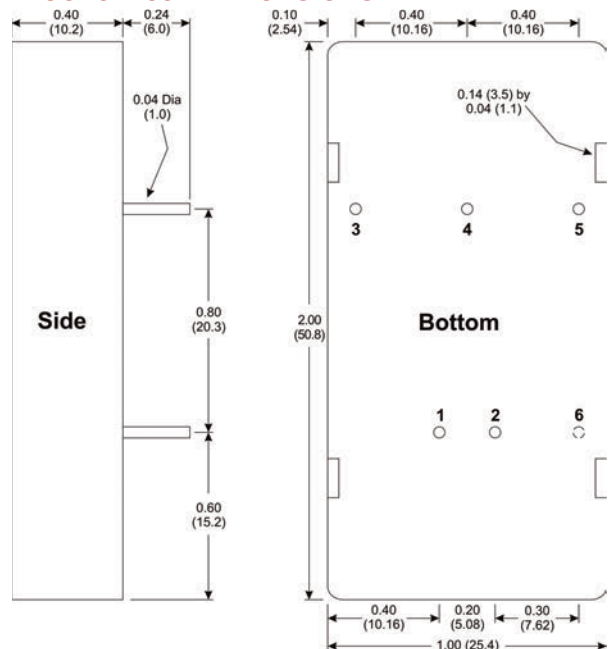
**Heatsink Notes:**

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

**Derating Curve**



**Mechanical Dimensions**



**Mechanical Notes:**

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