

B4000RW Series



Compact, 1 x 2 Inch 40W, 2:1 Input Range DC/DC Converters

Key Features:

- 40W Output Power
- 2:1 Input Voltage Range
- 1,500 VDC Isolation
- Very High Efficiency
- Compact 1 x 2 Inch Case
- Single & Dual Outputs
- Optional Remote ON/OFF
- Industry Standard Pin-Out



MicroPower Direct



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	12 VDC Input			9.0	VDC	
	24 VDC Input			18.0		
	48 VDC Input			36.0		
Input Shutdown Voltage	12 VDC Input		8.3		VDC	
	24 VDC Input		16.5			
	48 VDC Input		33.0			
Input Filter	π (Pi) Filter (Complies with EN55022 Class "A")					
Output						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Output Voltage Accuracy				±1.0	%	
Output Voltage Balance	Dual Output , Balanced Loads			±2.0	%	
Line Regulation	Vin = Min to Max			±0.5	%	
	Single Output Models			±0.5	%	
Load Regulation, See Note 1	Dual Output Models			±1.0	%	
	3.3 & 5.0 Vout Models		100		mV P - P	
Ripple & Noise, See Note 2	12 & 15 Vout Models		150		mV P - P	
	Dual Output Models		150		mV P - P	
Output Power Protection				150	%	
Transient Recovery Time, See Note 3	25% Load Step Change		250		μSec	
Transient Response Deviation			±2.0		%	
Temperature Coefficient				±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			1,500	pF	
Switching Frequency			320		kHz	
Remote On/Off (See Note 4)						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Supply On		3.5		12.0	VDC	
Supply Off		0.0		1.2	VDC	
Standby Input Current			2.5		mA	
Control Common	Referenced to Negative Input (pin 2)					
Environmental						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Operating Temperature Range	Ambient	-40	+25	+55	°C	
Operating Temperature Range	Case			+105	°C	
Storage Temperature Range		-50		+125	°C	
Cooling	Free Air Convection					
Humidity	RH, Non-condensing			95	%	
RFI	Six-Side Shielded Metal Case					
Conducted EMI	EN55022 Class "A"					
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	328			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	

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			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								
B4001RW	12	9.0 - 18.0	2,472	50	50	3.3	8,000.0	0.0	3.9	89	21,000	8,000
B4002RW	12	9.0 - 18.0	3,745	50	50	5.0	8,000.0	0.0	6.2	89	13,600	8,000
B4003RW	12	9.0 - 18.0	3,745	50	50	12.0	3,333.0	0.0	15.0	89	2,360	8,000
B4004RW	12	9.0 - 18.0	3,703	50	50	15.0	2,666.0	0.0	18.0	90	1,510	8,000
B4005RW	12	9.0 - 18.0	3,786	50	50	±12.0	±1,666.0	±145.0	±15.0	88	±1,200	8,000
B4006RW	12	9.0 - 18.0	3,787	50	50	±15.0	±1,333.0	±110.0	±18.0	88	±750	8,000
B4011RW	24	18.0 - 36.0	1,222	30	30	3.3	8,000.0	0.0	3.9	90	21,000	4,000
B4012RW	24	18.0 - 36.0	1,832	30	30	5.0	8,000.0	0.0	6.2	91	13,600	4,000
B4013RW	24	18.0 - 36.0	1,831	30	30	12.0	3,333.0	0.0	15.0	91	2,360	4,000
B4014RW	24	18.0 - 36.0	1,831	30	30	15.0	2,666.0	0.0	18.0	91	1,510	4,000
B4015RW	24	18.0 - 36.0	1,872	30	30	±12.0	±1,666.0	±145.0	±15.0	89	±1,200	4,000
B4016RW	24	18.0 - 36.0	1,872	30	30	±15.0	±1,333.0	±110.0	±18.0	89	±750	4,000
B4021RW	48	36.0 - 75.0	611	20	20	3.3	8,000.0	0.0	3.9	90	21,000	2,000
B4022RW	48	36.0 - 75.0	916	20	20	5.0	8,000.0	0.0	6.2	91	13,600	2,000
B4023RW	48	36.0 - 75.0	906	20	20	12.0	3,333.0	0.0	15.0	92	2,360	2,000
B4024RW	48	36.0 - 75.0	906	20	20	15.0	2,666.0	0.0	18.0	92	1,510	2,000
B4025RW	48	36.0 - 75.0	936	20	20	±12.0	±1,666.0	±145.0	±15.0	89	±1,200	2,000
B4026RW	48	36.0 - 75.0	936	20	20	±15.0	±1,333.0	±110.0	±18.0	89	±750	2,000

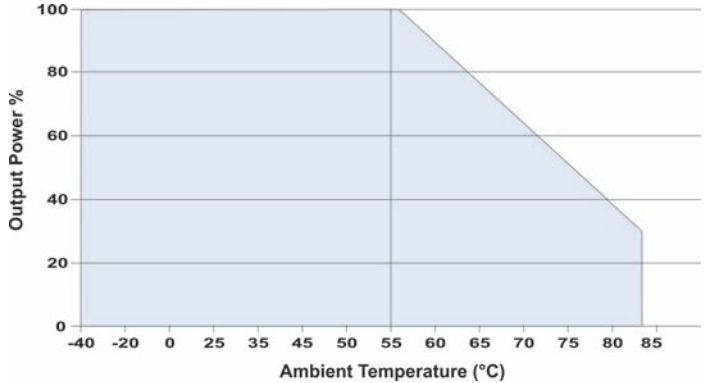
For heatsink option, add suffix "H" to model number (i.e. **B4003RW-H**)

For Remote Control option, add suffix "R" to model number (i.e. **B4003RW-R**)

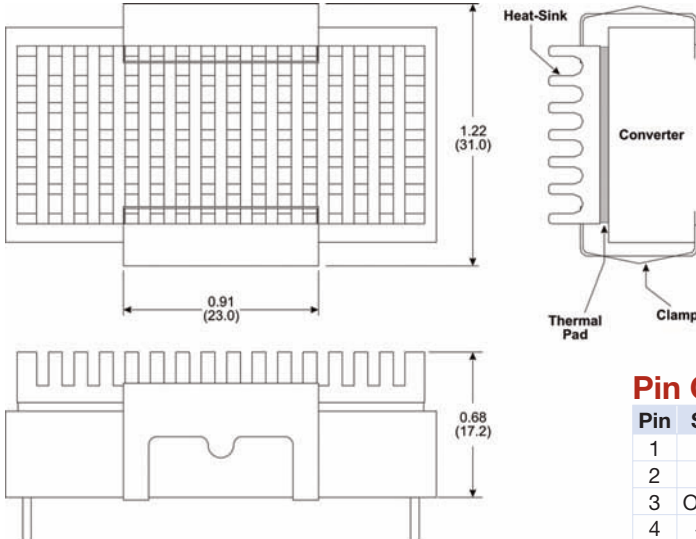
Notes:

- Load regulation is specified for a load change of minimum load to full load.
- When measuring output ripple, it is recommended that an external 1.0 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 5 µA. The maximum control current to the on/off pin at logic low is -100 µA. If the on/off pin is left open, the unit operates. If 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 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 ESR (ESR <1.0Ω at 100 kHz) capacitor be mounted close to the converter. For 12V input units, a 22.0 µF is recommended; for 24V & 48V units a 6.8 µF.
- An external resistor may be used to adjust the converter output by ±10%. To adjust the output UP, connect a 5%, 3W resistor between the minus output pin and the Vout trim pin. To adjust the output DOWN, connect a 5%, 3W resistor between the plus output pin and the Vout trim pin. For continuous 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 pin may be left floating if it is not used. Contact the factory for more information.
- 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



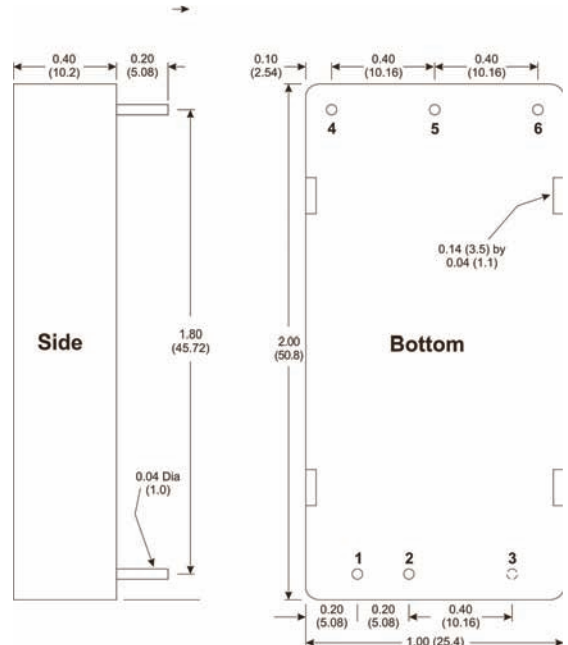
Heatsink Dimensions (Optional)



Pin Connections

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

Mechanical Dimensions



Heatsink Notes:

- Use of the heatsink will extend the units operating temperature range by approximately 10°C.
- The heatsink is black anodized aluminum.
- Heatsink weight is 0.07 Oz (2.0g)

Mechanical Notes:

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

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