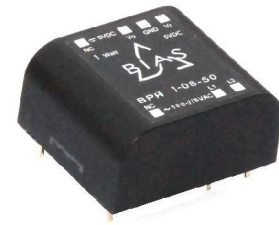




# BIAS 1 Watt Power Supply BPH 1 Series Data Sheet

Single (Vo) or Dual (Vo & Vr) output  
BPH 1-08-00, -08-33, -08-50  
BPH 1-14-00, -14-33, -14-50



Actual Size

## Features

- Complies with CSA CAN3-C235-83
- **NO DE-RATING** across entire temperature range (-30 to +70°C)
- Universal Input (100-375 VAC, 50/60Hz)
- Small Size—0.55in<sup>3</sup> [9.0cm<sup>3</sup>]
- Low no-load input power <30mW
- Constant power mode, not current limit
- 3000 VAC Isolation
- EN 55022, Class B; FCC Part 15, Class B
- Meets UL/CSA and EN Product Safety (ITE)

The BPH is a revolutionary, micro-sized, drop-in switching power supply module. It contains patented technology with unique features that provide solutions for a wide range of applications, including low power wireless and many other intelligent control devices. The patented SMPS topology is totally different from any other:

**It's Quiet:** Switching is synchronized and occurs only 10% of the time, so there is very little EMI / EMC interference with other circuits. This means no extra filtering or shielding is needed, helping to achieve longer transmission range with more reliable data communication in low power wireless applications.

**It's Powerful:** No power de-rating across the full wide temperature range. No current limit design margin needed when selecting a module. Charge large super caps faster than any regular SMPS with twice the power rating.

**It's Green:** High efficiency with ultra low standby power and very little self generated heat make it ideal for intelligent devices such as smart-sensors, smart-meters, smart-lighting, smart-grid, M2M or IoT, and any other control applications.

Bias Power AC/DC power supplies are available with two different types of outputs to fit your applications...

The characteristics of the main (Vo) and auxiliary (Vr) outputs are different and each has application-specific benefits which can provide high value to the system designer:

Vo is a voltage-regulated output which has a constant power mode instead of a conventional current limit. This output is best suited as a source for isolated DC utility power, which may be used directly or post-regulated with either a linear regulator or a DC/DC converter. **Vo is self protecting, cannot be overloaded and can be shorted indefinitely.** So unlike design-your-own, or partially complete modules where significant design margin is required to stay far away from current limit, **there is no need to oversize a Bias Power supply.** The graceful transition from voltage regulation to constant power along with the wide range of product ratings allows the designer to select a supply tightly matched to the design load.

Vr is also a voltage-regulated output and is thermally protected from overload. It has very low output ripple capable of driving elements which require a low-noise, tightly-regulated supply. In addition, Vr is supplied internally by Vo. This means that any capacitance added to Vo can increase the hold-up time of Vr as well.

\*Note: maximum currents specified for constant voltage range only. See V-I curve on page 2 for Vo in constant power range.

## Operating Specifications

(@120VAC / 60 Hz / 25°C unless otherwise specified)

Electrical	
Input Voltage Range	100 - 375 VAC (50/60Hz)
Input Surge Withstand	420V, < 30 sec
Output Power (Pmax)	1.0 W (60Hz) 0.83 W (50Hz)
Efficiency	70% nom.
Output Vo (Peak @ 100% load)	+/- 10% across operational voltage range
Line / Load Regulation Vo (Peak)	+/- 1% Po < Pmax
Temperature Regulation Vo (Peak)	+/- 2% Po < Pmax
Ripple Vo	1.00 V p:p @ 120 Hz; 0.25 V p:p @ 100 kHz
Output Vr, 3.3 volt (+/- 5%)	For Vo = 8V, Ir out 53mA max, Io+Ir ≤ 125mA* For Vo = 14V, Ir out 23mA max, Io+Ir ≤ 71mA*
Output Vr, 5.0 volt (+/- 5%)	For Vo = 8V, Ir out 83mA max, Io+Ir ≤ 125mA* For Vo = 14V, Ir out 28mA max, Io+Ir ≤ 71mA*
No-load Consumption	30 mW typical @ Vin=120 VAC
Isolation	3000 VAC (meets UL / CSA & EN Product Safety)
Earth Leakage @ 120 VAC	< 10 uA
Short Circuit Protection	Continuous, Pin ≤ 0.6 w @ Vin = 120 VAC
Reliability @ 25° C, MIL HDBK-217F	> 500 Khr MTBF
Thermal	
Operating Temperature	-30 to +70° C
Operating Relative Humidity	0 – 95%, non-condensing
Storage Temperature	-40 to +105° C
Mechanical	
Package Size (L x W x H)	1.10 x 0.92 x 0.55 inches [27.94 x 23.24 x 13.97 mm]
Safety	
Safety Compliance	UL/EN 60950-1 2 <sup>nd</sup> Edition (CB Report Available)
EMI Emissions	EN 55022, Class B, FCC Part 15, Class B





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BPH 1-08-00, -08-33, -08-50

BPH 1-14-00, -14-33, -14-50

### Part Number Designation

Part Number	Output Configuration	Vo	Vr
BPH 1-08-00	Single output	8 VDC	N/A
BPH 1-14-00	Single output	14 VDC	N/A
BPH 1-08-33	Dual Output	8 VDC	3.3 VDC
BPH 1-08-50	Dual Output	8 VDC	5 VDC
BPH 1-14-33	Dual Output	14 VDC	3.3 VDC
BPH 1-14-50	Dual Output	14 VDC	5 VDC

PIN	DESCRIPTION
L1	Input High
L2	Input Low
N/C	No Connection
Vo	Output
GND	Ground
Vr	Vr Output
N/C	No Connection

#### NOTES

1. Pins 0.031" [0.787 mm] round
2. Pins extend 0.125" [3.175 mm] below stand-offs

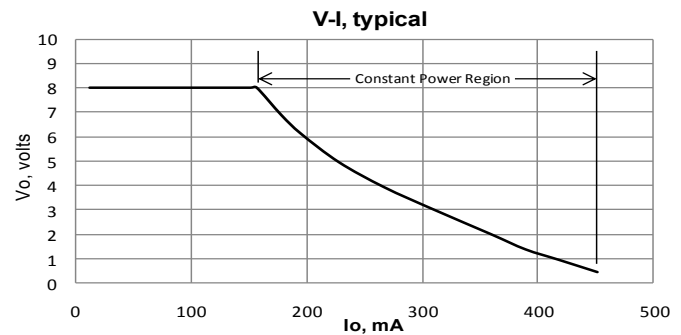
### Recommended Land Pattern, top view



### Recommended Isolation, Bottom View



### V-I Curve (For Vo in Constant Power Range)



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