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POWERBOX Medline 200
OBN01 Series
200W
Multiple Output
AC/DC Medical Switch Mode Power Supply

Features
Low safety ground leakage current
Meet EN55011, EN55022 and FCC Class B
Power Factor 0.98 typical
Short-circuit protection
Power Fail Detect (PFD) signal
100% burn-in at full rated load
Optional cover and fan assembly
Remote inhibit - TTL high to disable output
Compliant with RoHS requirements

Input	
Voltage	90-264VAC
Frequency	47-63Hz
Input current	3.20A (rms) for 115VAC 1.60A (rms) for 230VAC
Leakage current	220µA max @ 264VAC, 63Hz
Touch current	100µA max @ 264VAC, 63Hz

Output	
Output voltage/current	See table
Max output power	See table
Ripple and noise	2% peak to peak maximum on 3.3V & 5.1V and 1% peak to peak maximum on other voltage outputs
Overvoltage protection	Provided on output #1 only; set at 112-132% of its nominal output voltage
Overcurrent protection	All outputs protected to short circuit conditions
Temperature coefficient	All outputs ±0.04% /°C maximum
Transient response	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 us after a 25% step load change
Fan power	12V at 200mA maximum, except 24V at 200mA maximum for OBN01210B and OBN012A5B, and 5V at 380mA maximum for OBN01403B

Interface Signals	
PFD	TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to V1 output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after V1 is within regulation.
Inhibit	Requires an external TTL high level signal to inhibit outputs for standard models.

Environmental	
Operating temperature	0°C to +70°C
Storage temperature	–40°C to +85°C
Humidity	5% to 95% non-condensing
Derating	Derate from 100% at +50°C linearly to 50% at +70°C
Cooling	10.8 CFM forced air provided on “C” version; 25 CFM forced air to be provided for “B” version by user

General	
Switching frequency	88-112 KHz
Efficiency	70% minimum on all models
Hold-up time	20 ms minimum at 110 VAC
Line regulation	±0.5% maximum at full load
Inrush current	20 A @ 115 VAC or 40 A @ 230 VAC, at 25°C cold start
Withstand voltage	5600 VDC from input to output (2 MOPP) 2100 VDC from input to ground (1 MOPP) 700 VDC from output to ground (To verify AC strength, get correct test method to avoid power supply damage.)
MTBF	350,000 hours at full load at 25°C ambient, calculated per MIL-HDBK-217F

Standards	
Safety standards	UL ES 60601-1, CSA C22.2 No. 60601-1, TÜV EN60601-1.
EMC performance	IEC 60601-1-2:2014 (4th ed.)
EN55011	Class B conducted, Class B radiated
EN61000-3-2	Harmonic distortion, Class A&D
EN61000-3-3	Line flicker
EN61000-4-2	ESD, ±15 KV air and ±8 KV contact
EN61000-4-3	Radiated immunity, 10 V/m
	Proximity test, 9V/m and 28V/m
EN61000-4-4	Fast transient/burst, ±2kV
EN61000-4-5	Surge, ±1KV diff., ±2kV common
EN61000-4-6	Conducted immunity, 10 Vrms (0.15 – 80 MHz) 10 Vrms ISM Bands + Amateurs
EN61000-4-8	Magnetic field immunity, 30A/m
EN61000-4-11	Voltage dips: 100% drop, 0.5 periods 100% dip, 1 period 30% dip, 25/30 periods Interruptions: 100% drop, 5 seconds

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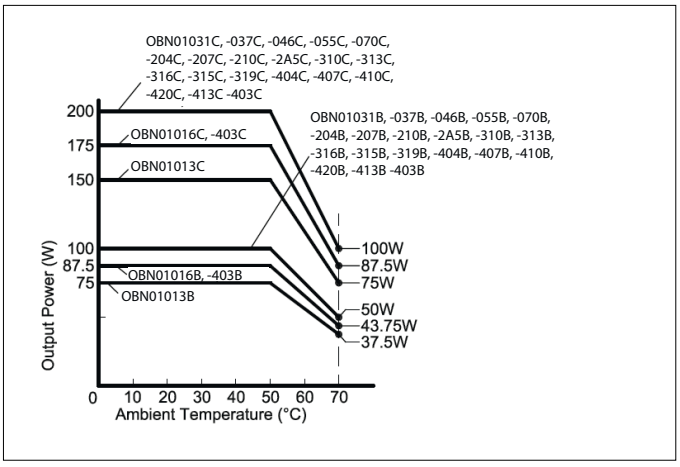
Article [1]	Output 1 [4]				Output 2 [2] [4]				Output 3				Output 4 [3]				Max [4]
Number	V1	Imin	Imax	Tol.	V2	Imin	Imax	Tol.	V3	Imin	Imax	Tol.	V4	Imin	Imax	Tol.	Power
OBN01016B	5.1 V	3.0 A	35.0 A	±2%		(N/A)				(N/A)				(N/A)			87.5W /175W
OBN01013B	3.3 V	3.0 A	46.0 A	±3%		(N/A)				(N/A)				(N/A)			75W /150W
OBN01031B	12 V	1.2 A	16.7 A	±2%		(N/A)				(N/A)				(N/A)			100W /200W
OBN01037B	15 V	1.0 A	13.4 A	±2%		(N/A)				(N/A)				(N/A)			100W /200W
OBN01046B	24 V	0.6 A	8.4 A	±2%		(N/A)				(N/A)				(N/A)			100W /200W
OBN01055B	30 V	0.5 A	6.7 A	±2%		(N/A)				(N/A)				(N/A)			100W /200W
OBN01070B	48 V	0.5 A	4.2 A	±2%		(N/A)				(N/A)				(N/A)			100W /200W
OBN01204B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%		(N/A)				(N/A)			100W /200W
OBN01207B	+5.1 V	3.0 A	30.0 A	±2%	+15 V	0 A	6 A	±4%		(N/A)				(N/A)			100W /200W
OBN01210B	+5.1 V	3.0 A	30.0 A	±2%	+24 V	0 A	4 A	±4%		(N/A)				(N/A)			100W /200W
OBN012A5B	+12 V	1.0 A	8.7 A	±2%	+24 V	0 A	4 A	±4%		(N/A)				(N/A)			100W /200W
OBN01310B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-5 V	0 A	6 A	±4%		(N/A)			100W /200W
OBN01313B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-12 V	0 A	4 A	±4%		(N/A)			100W /200W
OBN01316B	+5.1 V	3.0 A	30.0 A	±2%	+15 V	0 A	6 A	±4%	-15 V	0 A	4 A	±4%		(N/A)			100W /200W
OBN01315B	+5.1 V	3.0 A	30.0 A	±2%	+15 V	0 A	6 A	±4%	-12 V	0 A	4 A	±4%		(N/A)			100W /200W
OBN01319B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	24 V	0 A	4 A	±4%		(N/A)			100W /200W
OBN01404B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-12 V	0 A	4 A	±4%	5 V	0 A	6 A	±4%	100W /200W
OBN01407B	+5.1 V	3.0 A	30.0 A	±2%	+15 V	0 A	6 A	±4%	-15 V	0 A	4 A	±4%	24 V	0 A	4 A	±4%	100W /200W
OBN01410B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-12 V	0 A	4 A	±4%	12 V	0 A	4 A	±4%	100W /200W
OBN01420B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-15 V	0 A	4 A	±4%	15 V	0 A	4 A	±4%	100W /200W
OBN01413B	+5.1 V	3.0 A	30.0 A	±2%	+12 V	0 A	8 A	±4%	-12 V	0 A	4 A	±4%	24 V	0 A	4 A	±4%	100W /200W
OBN01403B	+3.3 V	3.0 A	30.0 A	±3%	+5.1 V	0 A	8 A	±4%	-12 V	0 A	4 A	±4%	12 V	0 A	4 A	±4%	87.5W /175W

Notes:

1. Suffix “B” in model numbers denotes U-bracket form. Change “B” to “C” for enclosed form with cover and fan assembly.
2. Peak output current is 12 A on +12 V, 9 A on +15 V and 6 A on +24 V.
3. Output #4 is floating. It can be connected externally for positive or negative output.
4. 200 watts for “C” version with a cover and fan assembly. 100 watts for “B” version without moving air (maximum current of output #1 & #2 derated to 50%), or 200 watts with 25 CFM forced air provided by user. For option C, fan starts when V1 load exceed Imin (full speed).
5. When the remote Sense facility is not used, +Sense must be connected to +V, and -Sense to return, on P2 connector.
6. All models may be operated at no-load. At no-load, output voltage tolerance increases to ±10%.
7. Ripple and noise is maximum peak to peak voltage value measured at output within 20 MHz bandwidth, at rated line voltage and output load ranges, and with a 10 µF tantalum capacitor in parallel with a 0.1 µF ceramic capacitor across the output.
8. Option available for fixed installations, fuse in Neutral removed, contact Powerbox for details.

Derating Curve



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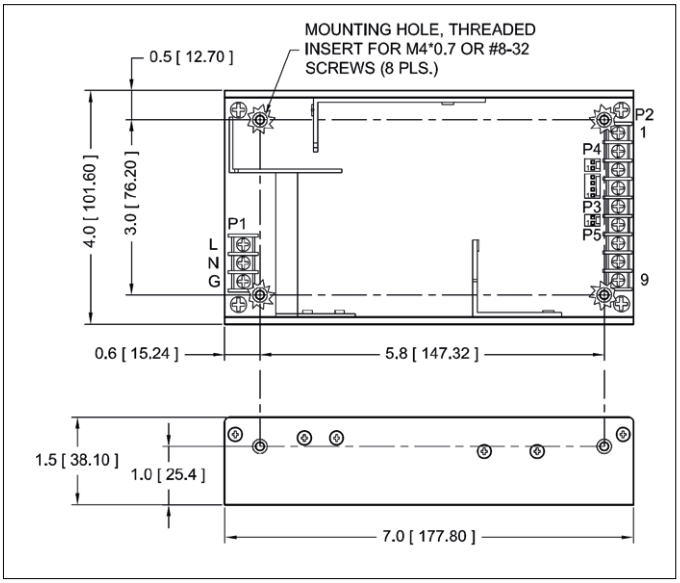
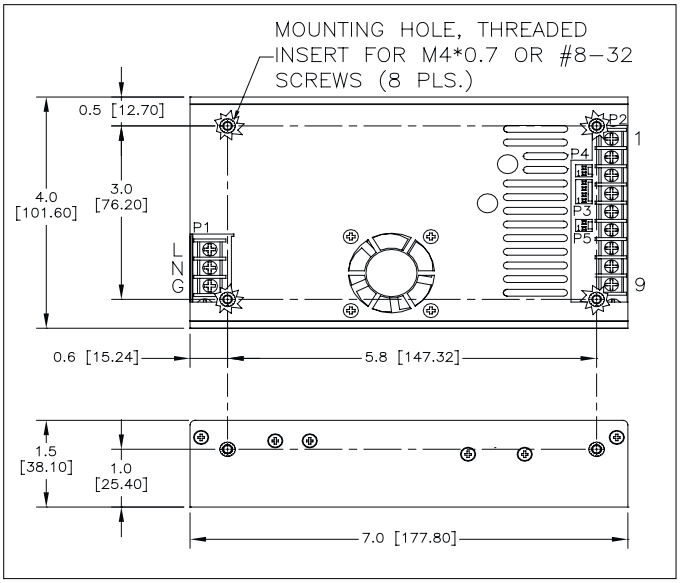
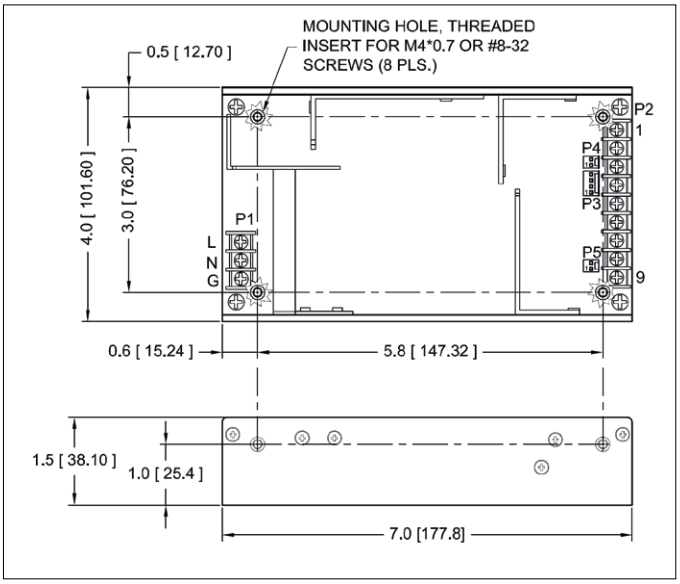
Mechanical Single Output U-Bracket



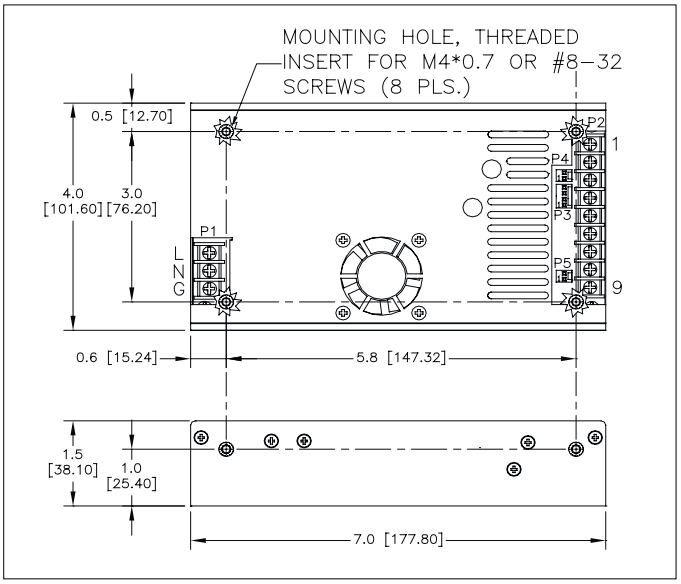
Mechanical Single Output Enclosed



Mechanical Multiple Output U-Bracket



Mechanical Multiple Output Enclosed



Notes:

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle DT-35-B01W-03. Output connector P2 is Dinkle DT-35-B01W-09. Screws are M3, nickel plated.
4. Connector P3 mates with Molex housing 22-01-1043 and Molex 40445 series crimp terminal.
5. Connectors P4 and P5 mate with Molex housing 22-01-1023 and Molex 40445 series crimp terminal.
6. P4 is for DC fan, 12 V/0.2 A rated, Pin 1 +V and Pin 2 -V; except 24 V/0.2 A rated for models OBN01210B and OBN012A5B, and 5 V/0.38 A rated for models OBN01403B).
7. Weight: 820 grams (1.8 lbs.) approx. for U-bracket form, 960 grams (2.1 lbs.) approx. for enclosed form.
8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

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Pin Connection

Model		Connector P2									P3				P5	
		1	2	3	4	5	6	7	8	9	1	2	3	4	1	2
OBN01013B	OBN01016B															
OBN01031B	OBN01037B	-Sense	Com.	Com.	Com.	Com.	+V1	+V1	+V1	+Sense	Fan	Com.	Com.	PFD	Inhibit	Inhibit
OBN01046B	OBN01055B		Ret.	Ret.	Ret.	Ret.					+V	Ret.	Ret.		+V	-V
OBN01070B																
OBN01204B	OBN01207B	V1	V1	Com.	Com.	Com.	V2	N.C.	N.C.	N.C.	Fan	Com.	Com.	PFD	Inhibit	Inhibit
OBN01210B	OBN012A5B			Ret.	Ret.	Ret.					+V	Ret.	Ret.		+V	-V
OBN01310B	OBN01313B	V1	V1	Com.	Com.	Com.	V2	V3	N.C.	N.C.	Fan	Com.	Com.	PFD	Inhibit	Inhibit
OBN01316B	OBN01315B			Ret.	Ret.	Ret.					+V	Ret.	Ret-		+V	-V
OBN01319B		V1	V1	Com.	Com.	Com.	V2	N.C.	V3	+V3	Fan	Com.	Com.	PFD	Inhibit	Inhibit
				Ret.	Ret.	Ret.			Return		+V	Ret.	Ret.		+V	-V
OBN01404B	OBN01407B	V1	V1	Com.	Com.	Com.	V2	V3	V4	+V4	Fan	Com.	Com.	PFD	Inhibit	Inhibit
OBN01410B	OBN01420B			Ret.	Ret.	Ret.			Return		+V	Ret.	Ret.		+V	-V
OBN01413B	OBN01403B															

Specifications are subject to change without notice.