

MBC450 SERIES 450W AC/DC



FEATURES

- 300W convection cooled
- 4.0" x 6.5" x 1.6" (101.6 x 165 x 41 mm)
- Universal AC input
- Medical (BF) Safety Approvals – 3rd edition
- Conducted EMI EN 55022-B, FCC Part 15 Level B
- CE marked LVD
- 5 V s/b and 12 V fan outputs standard
- ITE Safety Agency Approvals
- RoHS Compliant

APPLICATIONS

- | | |
|------------------------|----------------------|
| ○ Diagnostic Equipment | ○ Home Health Care |
| ○ Drug Pump | ○ Monitoring Devices |
| ○ Dialysis | ○ Imaging Equipment |
| ○ Ultrasound | ○ Hospital Beds |
| ○ Surgical Devices | ○ Therapy Devices |

TECHNICAL DATA:

Input

PARAMETER	DESCRIPTION/CONDITION	
Input Voltage Range	Universal Input	90 - 264 VAC 120 – 390 VDC
Input Frequency Range	47-63 Hz	
Input Protection	Dual fusing, T8A/250 V in AC Line and AC Neutral	
Leakage Current	270 µA, Touch Leakage Current - 45 µA @120 VAC / 63 Hz	
Input Current	120 VAC 230 VAC	4.5 A 2.3 A
No Load Power	120 VAC 230 VAC	0.4 W 0.8 W
Inrush Current (Cold Start)	120 VAC 230 VAC	40 A 75 A

Output

PARAMETER	DESCRIPTION/CONDITION	
Power	155 W to 450 W steady state depending upon output voltage. Peak power of 475 W for 24 V, 30 V & 500 W for 48 V model for 5 seconds, maximum duty cycle 10%.	
Voltage Adjustment	V1	± 3%
Transient Response	<10%, 50 to 100% load change, 50 Hz, 50% duty cycle, 0.1 A / µSec, recovery under 5 mSec	
Over Voltage Protection (V1 only)	>114% min	Unit will latch off until AC is cycled.
Over Current Protection	120 to 150%	
Short Circuit Protection	Hiccup mode	+5Vs/b shall remain normal.
Over Temperature Protection	Automatic recovery	130°C primary heat sink +/-5%
Set point tolerance	±0.5%	
Rise Time	<100 mSec	From 10% to 90% of V1 nominal rating

Ordering Information

PRODUCT FAMILY	VOLTS (VDC)	MAX LOAD CONVECTION (3)	MAX LOAD 300 LFM (3)	MINIMUM LOAD (A)	RIPPLE & NOISE (2)	TOTAL REGULATION
MBC450-1T05G	5	31.0 A	55.0 A	0	2%	± 3.5%
MBC450-1T12G	12	20.83 A	37.5 A	0	2%	± 3.5%
MBC450-1T15G	15	16.66 A	30.0 A	0	2%	± 3.5%
MBC450-1T24G	24	12.30 A	18.75 A	0	2%	± 3.5%
MBC450-1T30G	30	10.0 A	15.0 A	0	2%	± 3.5%
MBC450-1T48G	48	6.25 A	9.37 A	0	2%	± 3.5%
Vfan (all models)	12	0.5 A	0.5 A	0	10%	± 30%
V s/b (all models)	5	1.5 A	2.0 A	0	5%	± 5%

Notes:

1. Peak current rating on V1 is 120% of max, lasting < 30 Sec with max of 10% duty cycle.
2. Ripple is peak to peak with 20MHz bandwidth and 10uF (Tantalum capacitor) in parallel with a 0.1uF ceramic capacitor at rated line voltage and load ranges.
3. Combined output power of V1 plus fan supply and standby supply should not exceed max, power rating.
4. Standby output voltage tolerance including set point.
5. Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/-30% and needs min. 1% load on V1 output to be within regulation band. Ripple and noise is less than 10%.
6. Specifications are for nominal input voltage, 25°C unless otherwise stated.
7. Power supply is shipped with J3 housing, pins 9 and 10 shorted to enable V1, main output.
8. Derate output power linearly to 80% from 90 Vac to 80 Vac input.
9. For ordering Side Fan or Top Fan mounting option product add -S or -T suffix with the model name.
10. Specifications subject to change without notice.
11. Air flow over long edge (either direction) required for air flow rating. See mechanical drawing below.
12. Warranty 2 years.

General Specifications

PARAMETER	DESCRIPTION/CONDITION	
Hold Up Time	120 VAC	10 mSec
	230 VAC	10 mSec
Power Factor	120 VAC	0.98
	230 VAC	0.95
Efficiency (Full Load)	120 VAC	88% (24V, 48V, 30V), 86% (12V, 15V), 83% (5V) typical
	230 VAC	90% (24V, 48V, 30V), 86% (12V, 15V), 83% (5V) typical
MTBF	>250 khrs	Bellcore TR-332
Switching Frequency	PFC converter: Variable, 45-160kHz typical	Resonant converter: Variable, 35-250 kHz, 90 kHz typical
Isolation Voltage	4242 VDC 2121 VDC	Input to Output Input to Earth
Weight	900g (1.98 lbs)	

Environmental

PARAMETER	DESCRIPTION/CONDITION	
Operating Temperature	-20 to 70 °C	See derating charts below.
Storage Temperature	-40 to 85 °C	
Relative Humidity	95% RH, non-condensing	
Altitude	Operating 10,000 ft.	Non-operation 40,000 ft.
CE Mark	Complies with LVD Directive	
Conducted Emissions:	EN55022-B, CISPR22-B, FCC PART15-B	
Static Discharge	EN61000-4-2	Level 3
RF Field Susceptibility	EN61000-4-3	Level 3
Fast Transients/Bursts	EN61000-4-4	Level 3
Radiated Emissions	EN55022-B, CISPR22-B, FCC PART15-B	To be controlled in end system
Surge Susceptibility	EN61000-4-5	Level 3
Harmonic Current	EN61000-3-2	Class D

Signals

PARAMETER	DESCRIPTION/CONDITION
DC OK	Goes high approximately 100 mSec after V1 reached regulation limit. Upon failure this TTL signal goes low after V1 drops more than 5% of nominal (10% for 5 V output). Signal has a 10 k pull-up resistor between the signal and the +5 Vs/b.
Remote Sense	Compensates for 200 mV of cable drop.
I-Share Signal	Allows sharing of 2 or more power supplies within +/-10%. Current sharing with internal OR-ing diodes /MOSFETS for redundancy. A defective supply that is connected to the output voltage bus will have no adverse effect on the operation of the remaining functional supply (supplies).
DC OK	Signal goes high approximately 100 mSec after V1 output reaches 90% of nominal rating.
Remote Inhibit	Inhibit V1 with high/open between pins 9 and 10. Apply active low between pins 9 and 10 to enable output. Unit shipped with pin 9 shorted to pin 10. Does not inhibit the 5 Vs/b output.
Power Fail	Goes high when AC line drops below minimum level giving minimum of 10 mSec notification before output goes out of specified regulation limits.

Safety

PARAMETER	DESCRIPTION/CONDITION
EN / UL / CSA	EN60601-1, IEC 60601-1 (ed.3), ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1

Figure 1 Output Power Vs. Temperature

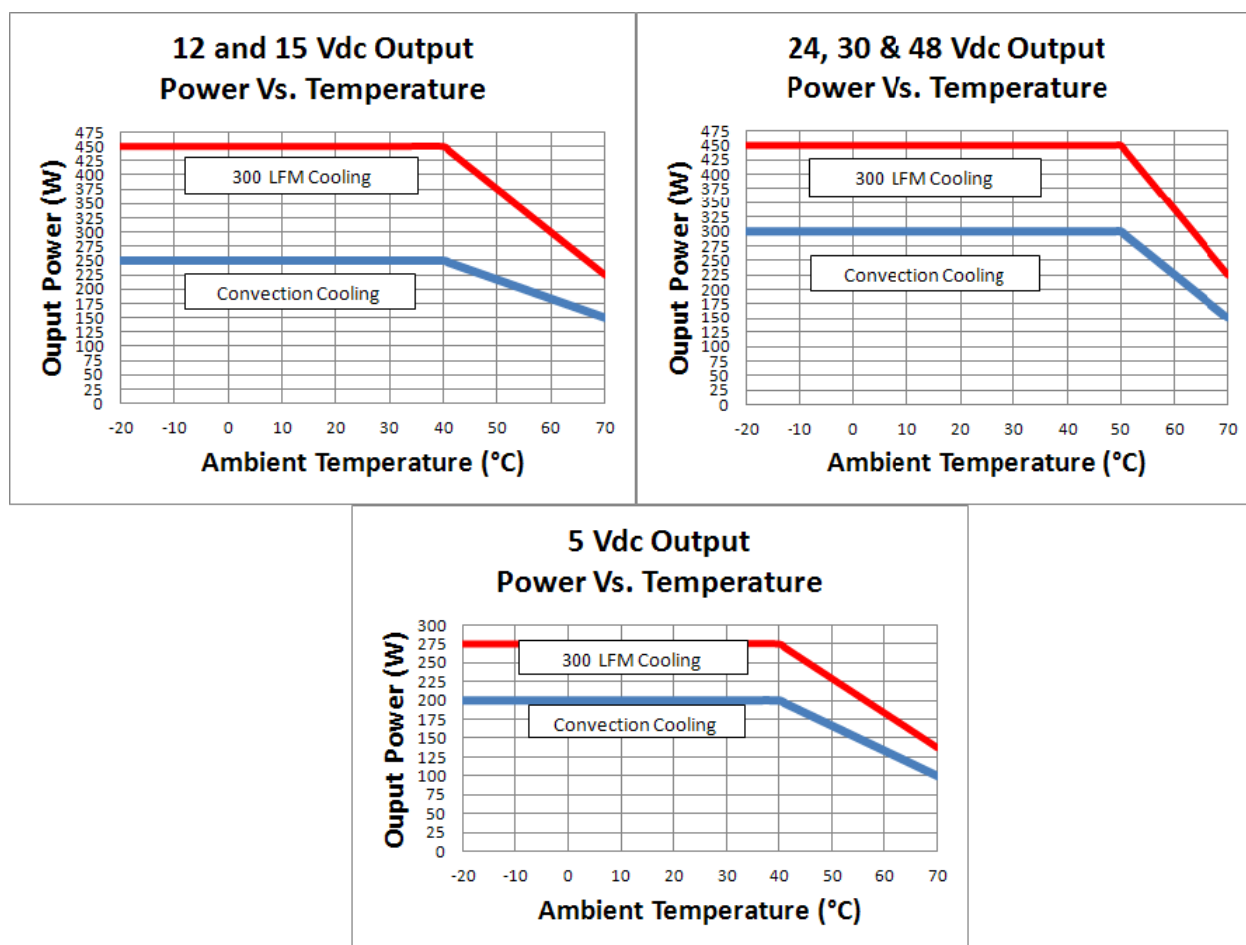


Figure 2 Dimensions Drawing (Without Fan Mounting)

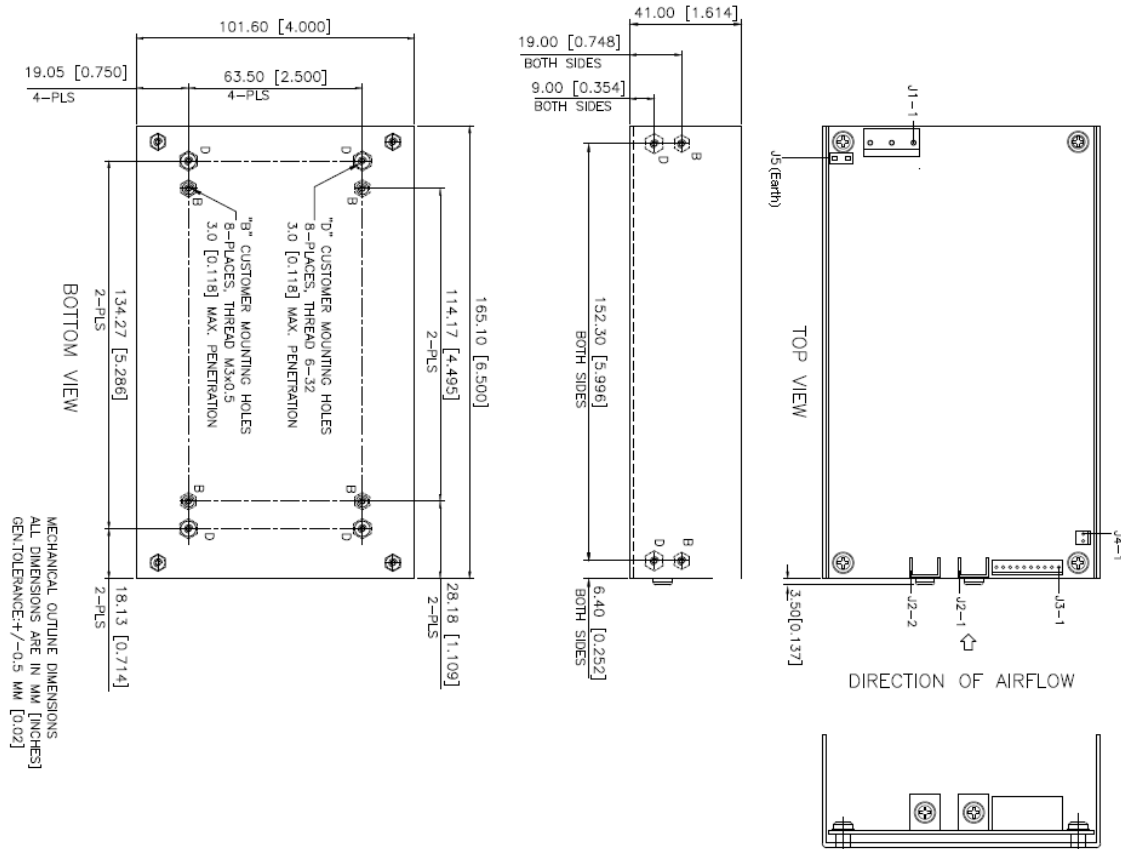


Figure 3 Dimensions Drawing (With Top Fan Mounting)

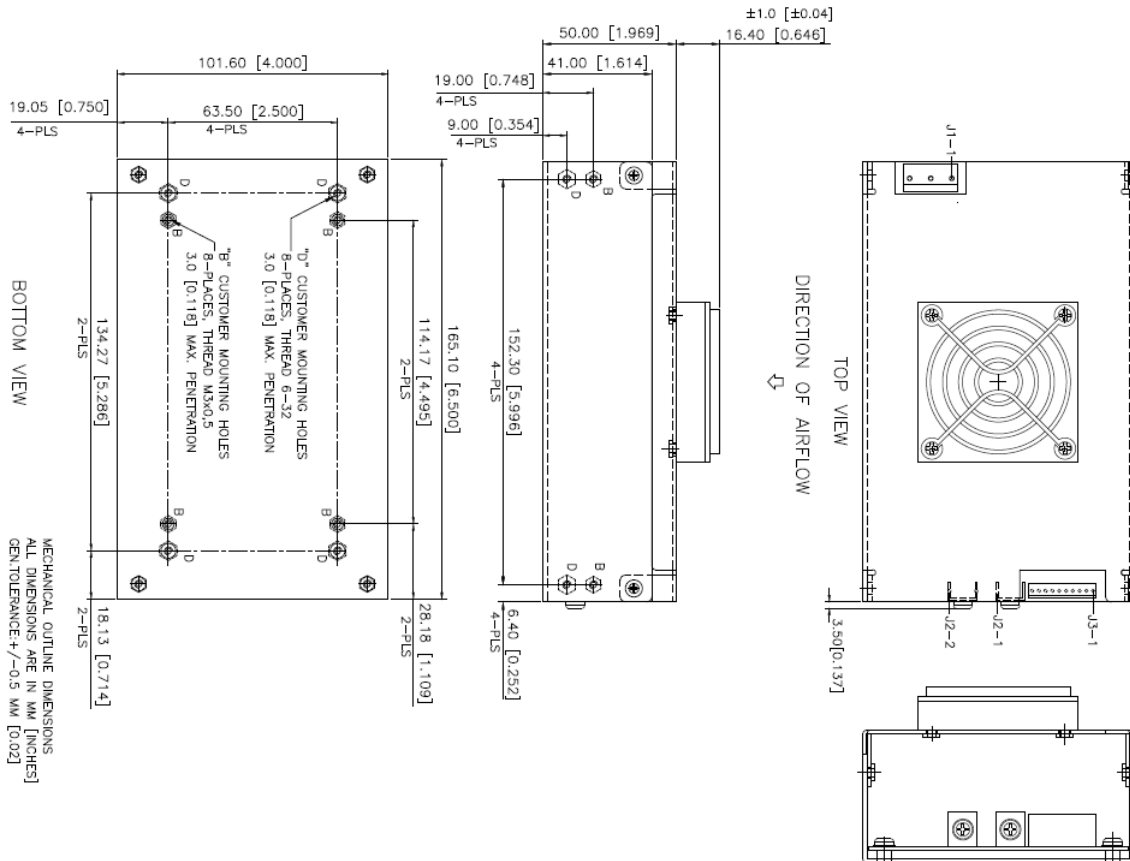
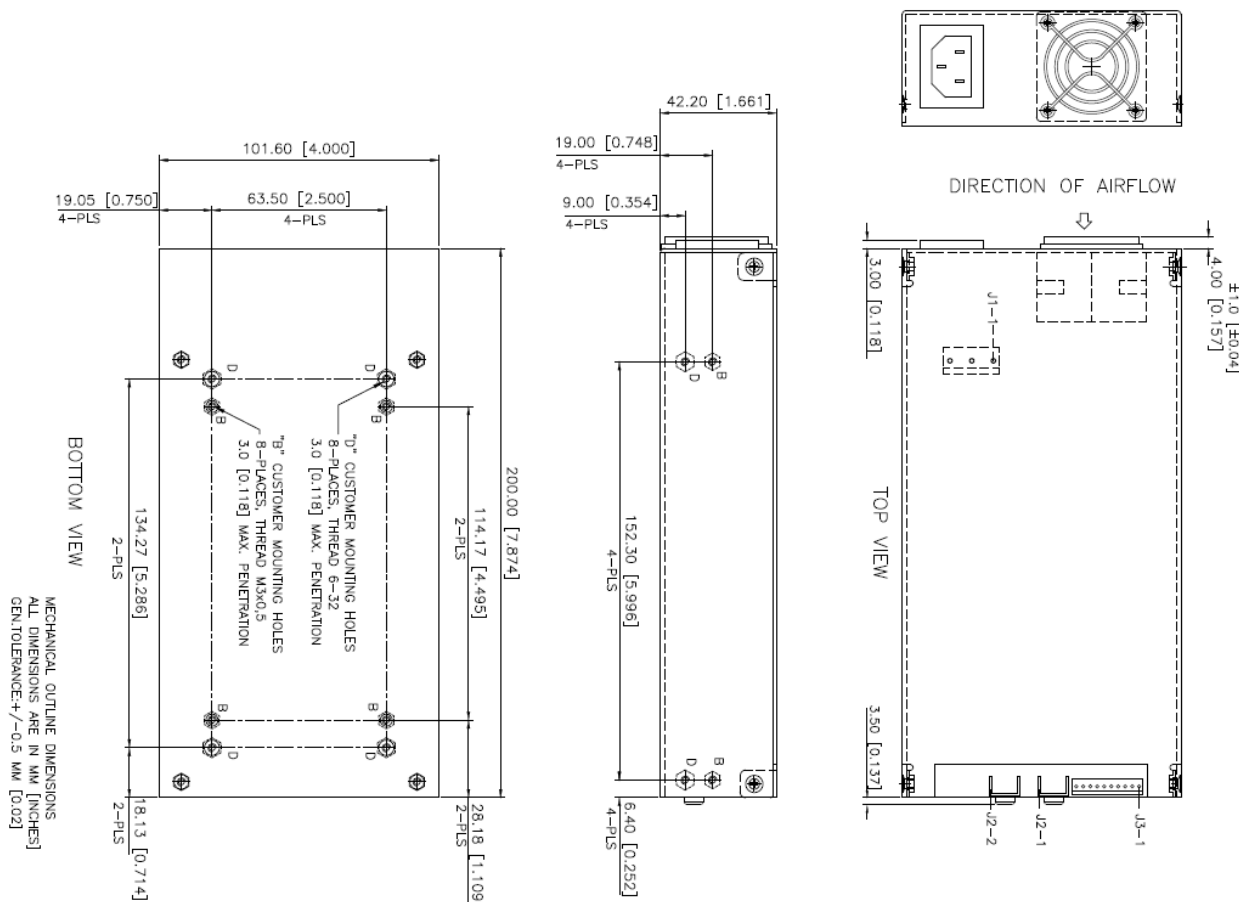


Figure 4 Dimensions Drawing (With Side Fan Mounting)



Mechanical

INPUT = J1	OUTPUT = J2	FAN = J4	EARTH = J5	SIGNALS = J3	
Pin 1 = AC line Pin 3 = AC neutral Pin 5 = Earth (5 position connector with pins 2 and 4 removed)	Two lugs, each with a 6-32 pan head screw. Lug 1 is +V1 and lug 2 is for Return.	J4-1: +12 V J4-2: Return		Pin 1 = NC Pin 2 = Power Fail Pin 3 = DC OK Pin 4 = Return Pin 5 = +5Vs/b	Pin 6 = +Remote Sense Pin 7 = -Remote Sense Pin 8 = I-Share Pin 9 = Return Pin 10 = Inhibit
Mating Connector: Tyco 1-1123722-5 Mating Pin: Tyco 1318912-2	J2 = 6-32 screw terminal. Mating part no: MOLEX 19141-0058/0063/0083 or equivalent	Mating Connector: Molex 22-01-2025, Pins = 08-50-0113	Molex: 19705-4301; Mating: 190030001	Mating Connector: Molex 22-01-2087, Pins Molex 08-50-0113	

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