MBC201 Series

Open Frame Power Supplies
Medical

The MBC201 Series of open-frame medical power supplies, with its wide universal input range 90-264 VAC, is available at 200 W of output power with forced-air cooling and a variety of single output voltages.

The MBC Series is designed and approved to the latest medical standards (EN/IEC 60601-1), providing 2 x MOPP isolation for Class I & Class II applications.

These power supplies are ideal for medical, telecom, datacom, industrial equipment and other applications.



RoHS Compliant

Key Features & Benefits

- 5 x 3 x 1.5 Inch Form Factor
- 200 W with Forced-Air Cooling
- High Efficiency > 88%
- 12 V Fan & 5 V Standby Outputs
- Remote Sense
- IEC Protection Class Options:
  - Class I: Earthing Tab J4 (no suffix)
  - Class II: No Earthing Tab (-2 suffix)
- Medical Safety Agency Approvals
- RoHS Compliant
- CE Marked

Applications

- Diagnostic
- Drug Pump
- Monitoring
- Dialysis
- Home Health Care
- Portable Equipment

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1. MODEL SELECTION

MODEL[3]	CONNECTOR	OUTPUT VOLTAGE	MAX LOAD CONVECTION [1]	MAX LOAD 300 LFM [1, 4, 5]	MINIMUM LOAD	RIPPLE & NOISE [2]
MBC201-1005G	JST	5.0 VDC	26.0 A	26.0 A	0.0 A	1%
MBC201-1T05G	Screw Terminal	5.0 VDC	26.0 A	35.0 A	0.0 A	1%
MBC201-1012G	JST	12 VDC	13.33 A	16.67 A	0.0 A	1%
MBC201-1T12G	Screw Terminal	12	13.33 A	16.67 A	0.0 A	1%
MBC201-1015G	JST	15	10.66 A	13.33 A	0.0 A	1%
MBC201-1T15G	Screw Terminal	15	10.66 A	13.33 A	0.0 A	1%
MBC201-1024G	JST	24	6.66 A	8.33 A	0.0 A	1%
MBC201-1T24G	Screw Terminal	24	6.66 A	8.33 A	0.0 A	1%
MBC201-1030G	JST	30	5.33 A	6.66 A	0.0 A	1%
MBC201-1T30G	Screw Terminal	30	5.33 A	6.66 A	0.0 A	1%
MBC201-1048G	JST	48	3.33 A	4.17 A	0.0 A	1%
MBC201-1T48G	Screw Terminal	48	3.33 A	4.17 A	0.0 A	1%
COVER-201-XBC	Metal cover kit accessory					

1 Combined output power from V1, VSTBY and VFAN should not exceed the total output power rating.
2 Ripple is 2% up to 20% load and < 1% above 20% load. Ripple is peak to peak with 20 MHz bandwidth and 10 µF (Tantalum capacitor) in parallel with a 0.1 µF capacitor at rated line voltage and load ranges.
3 For Class II (without input Earth pin) add suffix -2 (e.g.: MBC201-1012G-2).
4 Fan output voltage tolerance is +/-20%. During V1 full load, VFAN needs min. 20 mA load to be within regulation band.
5 Peak current for fan output is 1 A.

2. INPUT SPECIFICATIONS

Specifications are for nominal input voltage, 25°C unless otherwise stated.

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Input Voltage	Universal	90-264 VAC / 120-390 VDC
Input Frequency		47 to 63 Hz
Input Current	120 VAC: 230 VAC:	2.4 A max. 1.2 A max.
Inrush Current	120 VAC: 230 VAC:	35 A max. 65 A max.
Leakage Current	120 VAC: 230 VAC:	< 150 µA < 300 µA
Power Factor	120 VAC: 230 VAC:	0.99 0.95
Switching Frequency	PFC converter (variable) Resonant converter (variable)	35 to 250 kHz, 90 kHz typical 35 to 250 kHz, 90 kHz typical

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Efficiency	120 VAC: 230 VAC:	84% typical 86% typical
Hold Up Time	120 / 230 VAC	10 ms
Output Power	Derate output power linearly to 80% from 90 V to 80 VAC input. Peak Power: 250 W for 0.2 s	160 W to 200 W
Line Regulation		+/-0.5%
Load Regulation		+/-2.0%
Transient Response	Main output 50 to 100% load change, 50 Hz, 50% duty cycle, 0.1A / uSec	< 10%, recovery time < 5 ms
Rise Time		< 100 ms
Set Point Accuracy		± 1%
Voltage Adjustment	V1	± 3 %
Over Voltage Protection	V1 only	110 to 150 %
Over Current Protection		110% typical above rating
Short Circuit Protection	Short term, auto recovery	

4. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION		SPECIFICATION
Operating Temperature	Refer to derating curve (*Figure 1*) Start-up is guaranteed		-20 to 70°C -20 to 0°C
Storage Temperature			-40 to 70° C
Cooling	5 V model	Convection: 300 LFM:	130 W 175 W
	Other models	Convection: 300 LFM:	160 W 200 W
Humidity	Non Condensing		95%
Altitude	Operating: Non-Operating:		10,000 ft. 40,000 ft.
Reliability	MTBF according to Telcordia –SR332-Issue 3		1.6 million hours

5. EMC SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Conducted Emissions	EN55022-B, CISPR22-B, FCC PART15, EN60601-1-2	Class B
Radiated Emissions	EN55022-B, CISPR22-B, FCC PART15-B	To be controlled in end system
Harmonic Current	EN61000-3-2	Class D
Static Discharge	EN61000-4-2	Level 3
RF Field Susceptibility	EN61000-4-3	Level-3
Fast Transients/Bursts	EN61000-4-4	Level 3
Surge Susceptibility	EN61000-4-5	Level-3
AC Flicker	EN61000-3-3:	Pass

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6. SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Isolation Voltage	Input to Output:	Min. 5900 VDC
Safety Standards	Approved to the latest edition of the following standards: CSA/UL60601-1, EN60601-1 and IEC60601-1.	
Agency Approvals	Nemko, UL, C-UL	
CE mark	Complies with LVD Directive	

7. SIGNALS

PARAMETER	DESCRIPTION / CONDITION
Power Good Signal	TTL signal goes high after main output is in regulation band. Delay is 0.1 to 0.3 sec.
Power Fail Signal	TTL signal goes low 1 msec advance before output goes out of regulation due to mains failure
Remote ON / OFF	To turn-on power supply short J3 pin 4 to pin 6 (PSU is shipped in this configuration)
Remote Sense	Compensates for 200 mV cable drop

8. CONNECTOR & PIN DESCRIPTION

CONNECTOR	PIN	DESCRIPTION / CONDITION		MANUFACTURER / PN
AC Input Connector	J1	Pin 1 Pin 2	AC Neutral AC Line	Molex: 26-60-4030 or equivalent; Mating: 09-50-3031; Pins: 08-50-0106
DC Output Connector	J2	Pin 1,2,3 Pin 4,5,6	RTN Vout	Option 1: Tyco: 2-1776112-3 or equivalent Mating: 13 AWG wire Option 2: JST: B6P-VH-B (LF) (SN) or B6P-VH (LF) (SN) or equivalent Mating: VHR-6M; Pins: SVH-41T-P1.1
Signals & Aux Power	J3*	Pin 1 Pin 2 Pin 3 Pin 4 Pin 5 Pin 6 Pin 7 Pin 8	+VE Remote Sense VFAN (+12 V/0.5 A) -VE Remote Sense Remote ON/OFF VSTBY (+5 V/1 A, +/-5%) RTN (Signal) Power Fail Power Good	Molex: 22-23-2081 or equivalent Mating: 22-01-2087, Pins: 08-50-0113
Earthing Tab	J4			Molex: 19705-4301 or equivalent Mating: 190030001

* PSU is supplied with J3 housing, pin-4 and pin-6 shorted to enable main output without remote on/off feature.

9. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION
Weight	325 g (0.72 lbs.)
Dimensions	127.0 x 76.2 x 38.1 mm (5 x 3 x 1.5 inch)
Cooling	Convection: 83 W; 300 LFM: 175 W (5 V model) Convection: 160 W; 300 LFM: 200 W (other models)

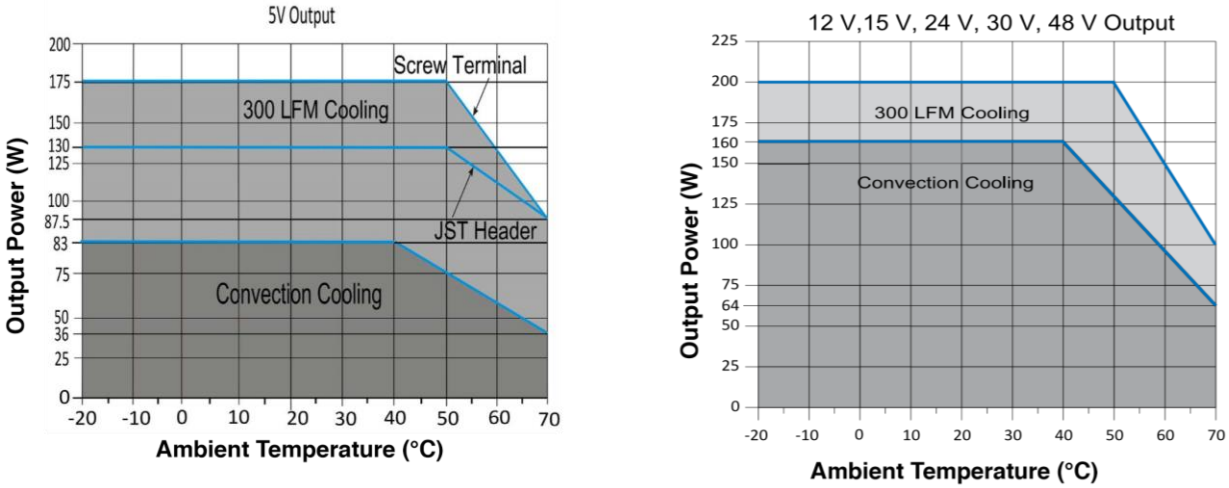


Figure 1 - Output Power Vs. Temperature

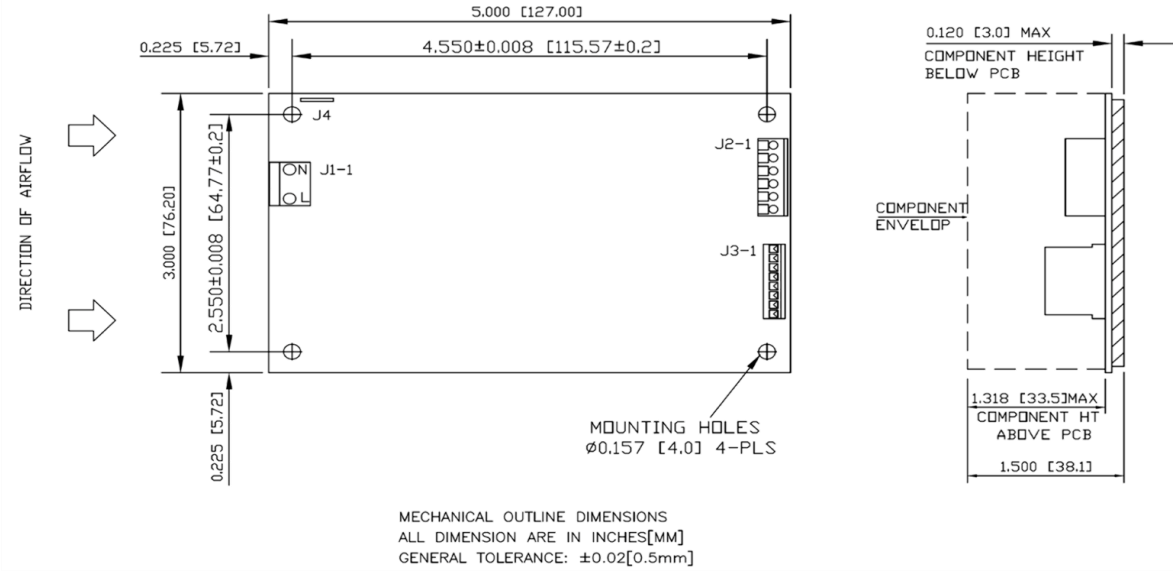


Figure 2 - Mechanical Drawing

NOTES: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following:

1 Stand off, used to mount PCB has OD of 5.4 mm max.
2 Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
3 Washer, if used, to have dia of 6.5 mm max.

For more information on these products consult: tech.support@psbel.com

NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.
TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

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