MBC201 Series

Open Frame Power Supplies
Medical

Not For New Design
Please refer to exact equivalent product series
MWLT200



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
- Approved to EN / IEC 60601-1
- High Efficiency > 88%
- 12 V Fan Output
- 5 V Standby Output
- Remote Sense
- IEC Protection Class Options:
  - Class I: Earthing Tab J4 (no suffix)
  - Class II: No Earthing Tab (-2 suffix)
- Medical Safety Agency Approvals
- CE Marked

Applications

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

NOT FOR NEW DESIGN

Please read our datasheet & drawing disclaimer here.

1. MODEL SELECTION

MODEL [1]	CONNECTOR	OUTPUT VOLTAGE	MAX LOAD [2]		MIN LOAD	POWER
			CONVECTION	300 LFM		
MBC201-1005G	JST (Header)	5 VDC	16.67 A	26.0 A	0.0 A	130 W
MBC201-1T05G	Screw Terminal			35.0 A		175 W
MBC201-1012G	JST (Header)	12 VDC	13.33 A	16.67 A	0.0 A	200 W
MBC201-1T12G	Screw Terminal					
MBC201-1015G	JST (Header)	15 VDC	10.67 A	13.33 A	0.0 A	200 W
MBC201-1T15G	Screw Terminal					
MBC201-1024G	JST (Header)	24 VDC	6.67 A	8.33 A	0.0 A	200 W
MBC201-1T24G	Screw Terminal					
MBC201-1030G	JST (Header)	30 VDC	5.33 A	6.67 A	0.0 A	200 W
MBC201-1T30G	Screw Terminal					
MBC201-1048G	JST (Header)	48 VDC	3.33 A	4.17 A	0.0 A	200 W
MBC201-1T48G	Screw Terminal					
COVER-201-XBC [3]	Metal Cover Kit (accessory)					

1 Class I products have an Earthing tab. For Class II version (without Earthing tab) add suffix -2 (e.g.: MBC201-1012G-2).
2 Combined output power from V1, VSTBY and VFAN should not exceed the total output power rating.
3 When used in Cover Kit, de-rate output power to 70 % under all operating conditions.

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 – 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
No Load Power		0.8 W
Switching Frequency	PFC converter (variable) Resonant converter (variable)	35 to 250 kHz, 90 kHz typical 35 to 250 kHz, 90 kHz typical

NOT FOR NEW DESIGN

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Output Voltage	Refer to Model Selection table	5 V to 48 V
Output Power [4]	Peak Power: 250 W for 2 s	160 to 200 W
Fan Output [5]	@ 5 A	12 V
Efficiency	120 VAC: 230 VAC:	84% typical 86% typical
Hold Up Time	120 VAC / 230 VAC:	10 ms
Power Factor	120 VAC: 230 VAC:	0.99 0.95
Line Regulation		± 0.5%
Load Regulation		± 2.0%
Transient Response	50 to 100% load change, 50 Hz, 50% duty cycle, 0.1A / µs	< 10%, recovery time < 5 ms
Ripple [6]	All outputs	1.0 % max
Rise Time		< 100 ms
Set Point Accuracy	Main output	± 1%
Output Voltage Adjustment	V1	± 3 %
Over Current Protection		110% typical above rating
Over Voltage Protection	V1	110 to 150%
Short Circuit Protection	Short term, Automatic recovery	
Cooling	Convection 300 LFM	83 W (5 V model), 160 W (other models) 175 W (5 V model), 200 W (other models)

[4] Derate output power linearly to 80% from 90 VAC to 80 VAC input.
[5] Fan output voltage tolerance is +/-20%. During V1 full load, VFAN needs min. 20 mA load to be within regulation band. Peak current for fan output is 1 A.
[6] Ripple is 2% up to 20% load and < 1% above 20% load. Ripple is peak to peak with 20 MHz bandwidth and 10 µF (Electrolytic capacitor) in parallel with a 0.1 µF capacitor at rated line voltage and load ranges.

4. EMC SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Conducted Emissions	EN 55011-B, CISPR22-B, FCC PART15-B	Pass
Radiated Emissions	EN 55011 B	Pass
Input Current Harmonics	EN 61000-3-2	Class D
Voltage Fluctuation and Flicker	EN 61000-3-3	Pass
ESD Immunity	EN 61000-4-2	Level 4, Criterion A
Radiated Field Immunity	EN 61000-4-3	Level 3, Criterion A
Electrical Fast Transient Immunity	EN 61000-4-4	Level 3, Criterion A
Surge Immunity	EN 61000-4-5	Level 3, Criterion A
Conducted Immunity	EN 61000-4-6	Level 3, Criterion A
Magnetic Field Immunity	EN 61000-4-8	Level 4, Criterion A
Voltage Dips, Interruptions	EN 61000-4-11	Criterion A & B

NOT FOR NEW DESIGN

© 2022 Bel Power Solutions & Protection

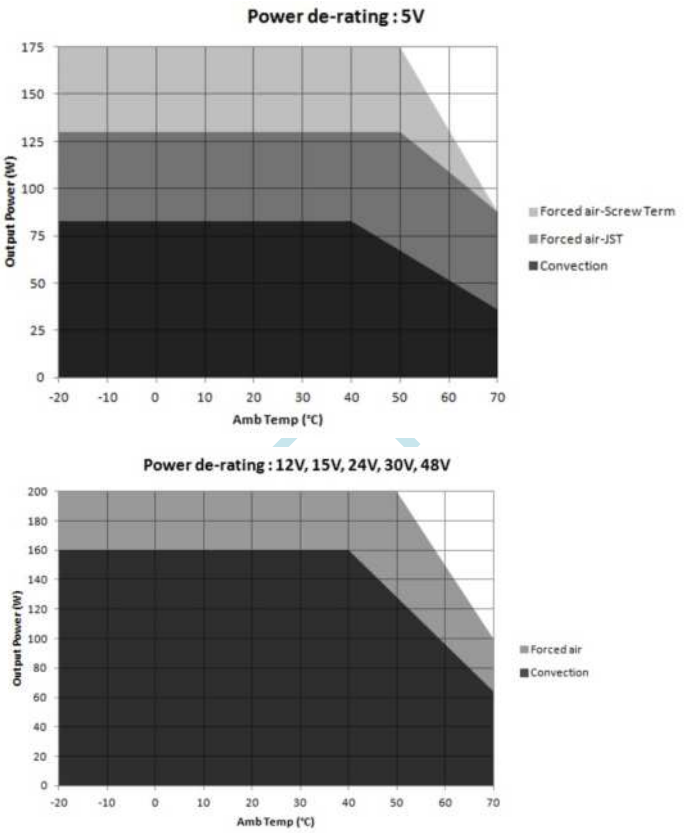
5. SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Isolation Voltage	Input to Output:	Min. 5900 VDC
Safety Standards	EN 60601-1, IEC 60601-1 (ed.3), ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1	
Agency Approvals	Nemko, UL, C-UL	
CE mark	Complies with LVD Directive	

6. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature [7]	-20 to 0°C start-up is guaranteed	-20 to 70°C -20 to 0°C
Storage Temperature		-40 to 85° C
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

[7] Refer to derating curves



Convection load: 83 W up to 40 °C
De-rate above 40 °C @ 1.89% per °C

Forced air cooled load: 130 W up to 50°C
(for screw terminal version)
De-rate above 50 °C @ 1.63% per °C

Forced air cooled load: 175 W up to 50°C
(for JST connector version)
De-rate above 50 °C @ 2.5% per °C

Convection load: 160 W up to 40 °C
De-rate above 40 °C @ 2% per °C

Forced air cooled load: 200 W up to 50°C
De-rate above 50 °C @ 2.5% per °C

Figure 1. Derating Curves

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 ms advance before output goes out of regulation due to mains failure
Remote Sense	Compensates for 200 mV cable drop
Remote ON / OFF	To turn on PSU short remote pin to ground

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 [8]	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
Earth [9] (Spade Connector)	J4			Molex: 19705-4301 or equivalent Mating: 190030001

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

[9] Class I product only

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 in)

NOT FOR NEW DESIGN

© 2022 Bel Power Solutions & Protection

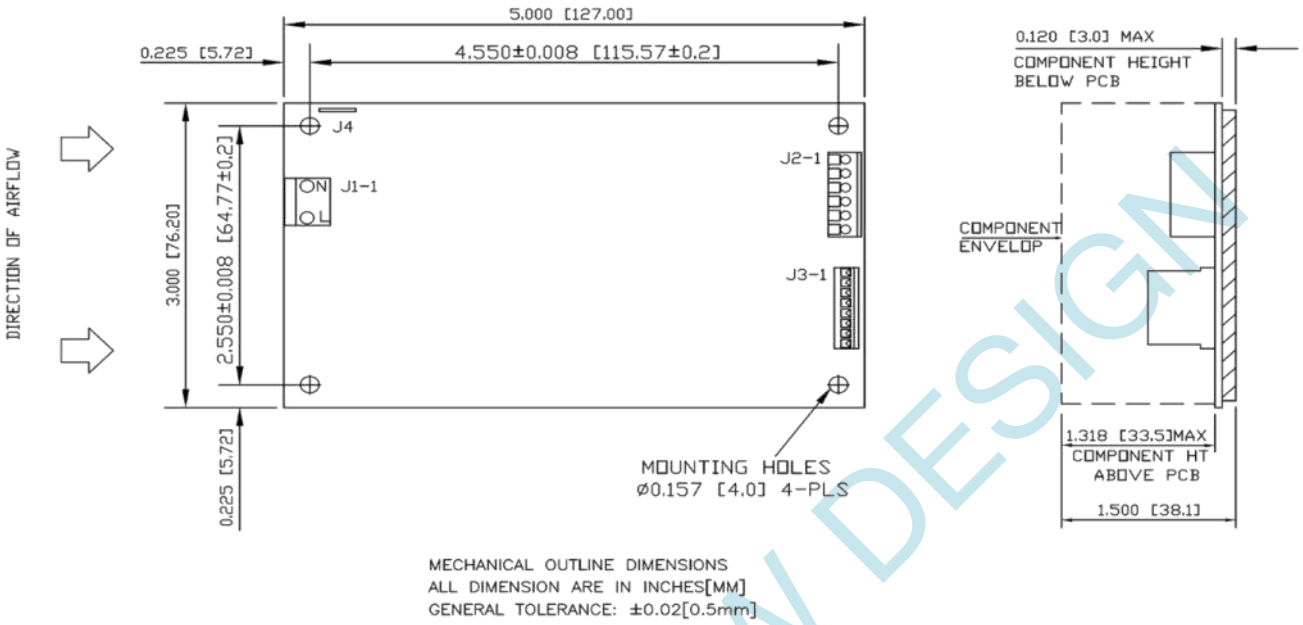


Figure 2. Mechanical Drawing

NOTES: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following:
Stand off, used to mount PCB has OD of 5.4 mm max.
Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
Washer, if used, to have dia of 6.5 mm max.

NOT FOR NEW DESIGN

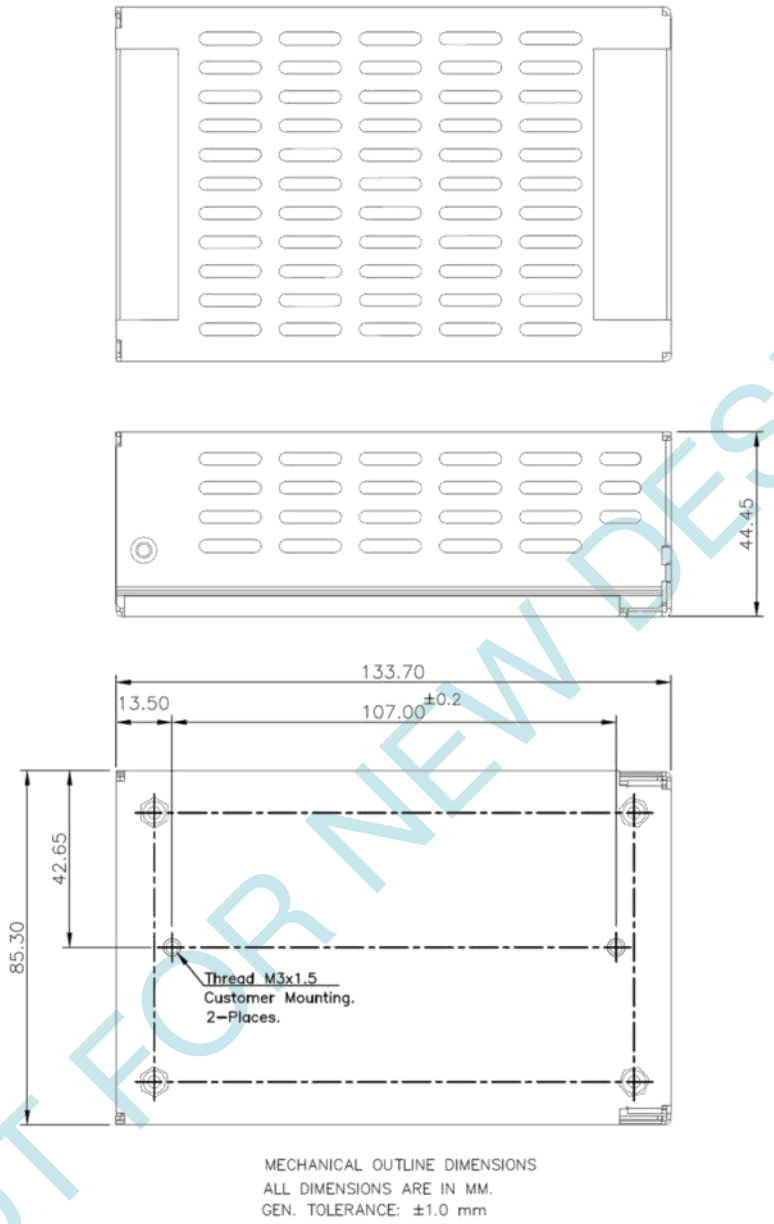


Figure 3. Mechanical Drawing with Cover Kit

NOT FOR NEW DESIGN

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.

bel POWER SOLUTIONS & PROTECTION
a bel group

Asia-Pacific +86 755 298 85888
Europe, Middle East +353 61 49 8941
North America +1 866 513 2839

© 2022 Bel Power Solutions & Protection