

MBC120 Series

Low Profile Open Frame Power Supplies

Medical

Not For New Design
Please refer to exact equivalent product series
MWLP120



The MBC120 Series of open frame medical power supplies feature a wide universal AC input range of 85 V – 264 VAC, offering 120 W of output power in a compact footprint, with a variety of isolated 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.

Key Features & Benefits

- 3 x 2 Inch Footprint
- 120 Watts with Forced Air Cooling
- Approved to EN/IEC 60601-1
- Efficiencies up to 93%
- -40 To 70°C Operating Temperature (85°C operating temperature available on request)
- Dual Fusing
- Suitable for BF Applications
- Means of Protection: 2x MOPP
- Thermal Shut-Down Feature
- >3.00 Million Hours, Telcordia -SR332-Issue 3
- No Load Power < 0.3 W
- Class II Option Available
- RoHS Compliant
- CE Marked

Applications

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

1. MODEL SELECTION

MODEL NUMBER ¹	DESCRIPTION	VOLTAGE	MAX. LOAD		POWER
			CONVECTION	300 LFM	
MBC120-1T12L MBC120-1012L	Screw Terminal Molex Header	12 V	8.33 A	10.0 A	120 W
MBC120-1T15L MBC120-1015L	Screw Terminal Molex Header	15 V	6.66 A	8.0 A	120 W
MBC120-1T24L MBC120-1024L	Screw Terminal Molex Header	24 V	4.16 A	5.0 A	120 W
MBC120-1T30L MBC120-1030L	Screw Terminal Molex Header	30 V	3.33 A	4.0 A	120 W
MBC120-1T48L MBC120-1048L	Screw Terminal Molex Header	48 V	2.08 A	2.5 A	120 W
MBC120-1T58L MBC120-1058L	Screw Terminal Molex Header	58 V	1.72 A	2.07 A	120 W
COVER-120-XBC ²	Metal cover kit accessory				

¹ For Class II version contact Bel sales representative.

² 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 (see derating under output power)	85 – 264 VAC / 390 VDC
Input Frequency		47 – 63 Hz
Input Current	115 VAC: 230 VAC:	1.2 A max. 0.65 A max.
No Load Power	Typical	< 0.3 W
Inrush Current	115 VAC: 230 VAC: 264 VAC:	25 A 45 A 75 A
Leakage Current	Typical (N/A for Class II Option) Touch current	300 µA <100 µA
Power Factor	With full load, active PFC	> 0.95
Switching Frequency	Typical	60 KHz

³ Functional, not approved.

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Output Voltage	Refer to Model selection table	From 12 V to 58 V
Output Power	Forced cooling (with 300 LFM) ⁴ Convection cooling for input 100 – 264 VAC: (de-rate linearly to 80 W @ 85 VAC)	120 W 100 W
Efficiency	48 V, 58 V: 24 V, 30 V: 12 V, 15 V:	93% 91% 90%
Hold-up Time	Typical	>10 ms
Line Regulation		+/-0.5%
Load Regulation		+/-1%
Minimum Load		0.0 A
Transient Response	25% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50 Hz = 4%	recovery time < 5 ms
Ripple ⁵	For all outputs	1.0 % max.
Output Voltage Adjustment		+/-3%
Rise Time	Typical	55 ms
Set Point Tolerance		+/-1%
Over Current Protection		> 110%
Over Voltage Protection	Latch type (AC recycling required)	110 to 140%
Short Circuit Protection	Hiccup mode	
Cooling	With 300 LFM Forced cooling ⁴ With Convection cooling (for input 100 – 264 VAC) (de-rate linearly to 80 W @ 85 VAC)	up to 120 W up to 100 W

⁴ Refer to Mechanical Drawing

⁵ 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 A; with external core (King core K5B RC 25x12x15-M in input cable)	Pass Level B
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 B

5. SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Isolation Voltage	Input to Output: (For medical applications)	4000 VAC
	Input to GND: (Not Applicable for Class II Option)	1500 VAC
	Output to GND: for type BF	1500 VAC
	for type B (N/A for Class II Option)	500 VAC
Protection Level	Primary to Secondary:	2 MOPP
	Primary to Earth:	1 MOPP
	Secondary to Earth:	1 MOPP
Safety Standard(s)	IEC/EN 60601-1 Edition 3.0 + AM1, ANSI/AAMI ES60601-1 and CAN/CSA -C22.2 No. 60601-1	
Agency Approvals	Nemko, UL, C-UL	
CE mark	Complies with LVD Directive	

6. ENVIRONMENTAL SPECIFICATIONS

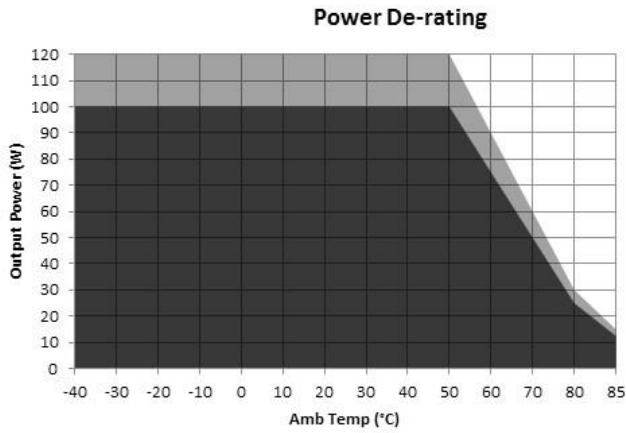
PARAMETER	DESCRIPTION / CONDITION	SPECIFICATION
Operating Temperature ⁶	-40 to 0°C startup guaranteed, with spec deviation ⁷	-40 to +70°C
Storage Temperature		-40 to +85°C
Relative Humidity	Noncondensing	5% to 95%
Altitude	Operating:	16,000 ft
	Non-operating:	40,000 ft.
Reliability	MTBF according to Telcordia -SR332-Issue 3	3.00 million hours

⁶ 85°C operating temperature available on request

⁷ Output ripple can be more than 10% of the output voltage.

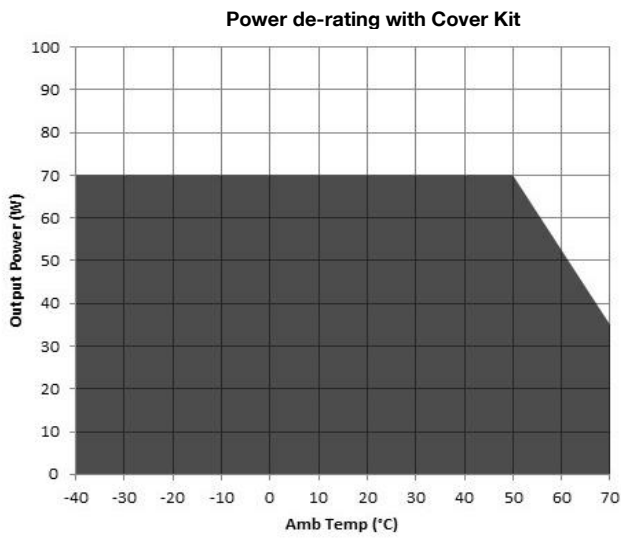
7. CONNECTOR & PIN DESCRIPTION

CONNECTOR	PIN	DESCRIPTION / CONDITION	MANUFACTURER / PN
AC Input Connector	J1	Pin 1	Screw Terminal (Option 1) Molex: 39357-0003 Tyco-2-1776112-3 Molex: 1722861103 (Mating conn: Molex 1722561003, Molex 1722561103, Molex 1722563103)
		Pin 2	
		Pin 3	
DC Output Connector	J2	Pin 1, 2	Screw Terminal (Option 1) Molex: 39357-0004 Tyco-2-1776112-4 Molex: 1722861104 (Mating conn: Molex 1722561004, Molex 1722561104, Molex 1722563104)
		Pin 3, 4	
		V1 -VE V1 +VE	



Convection load: 100 W up to 50 °C
De-rate above 50 °C @ 2.5% per °C
Up to 85°C operating temperature

Forced air cooled load: 120 W up to 50°C
De-rate above 50 °C @ 2.5% per °C
Up to 85°C operating temperature



Convection load: 70W up to 50 °C
De-rate above 50 °C @ 2.5% per °C

Figure 1. Derating Curves

8. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION
Weight	200 g
Dimensions	76.2 x 50.8 x 30.1 mm (3 x 2 x 1.18 inch)

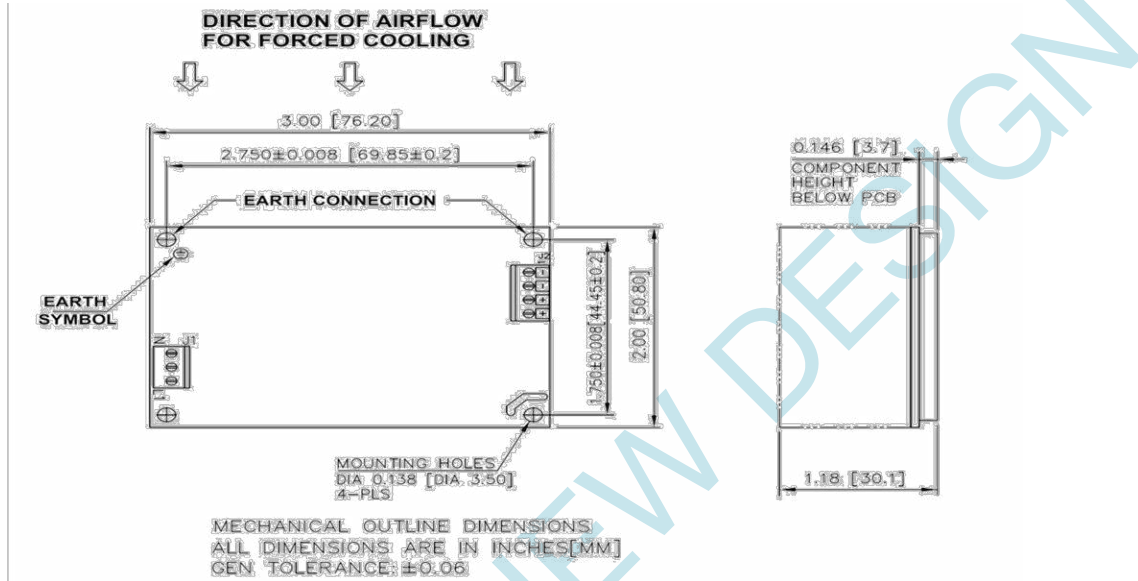


Figure 2. Mechanical Drawing - Screw Terminal (Option 1)

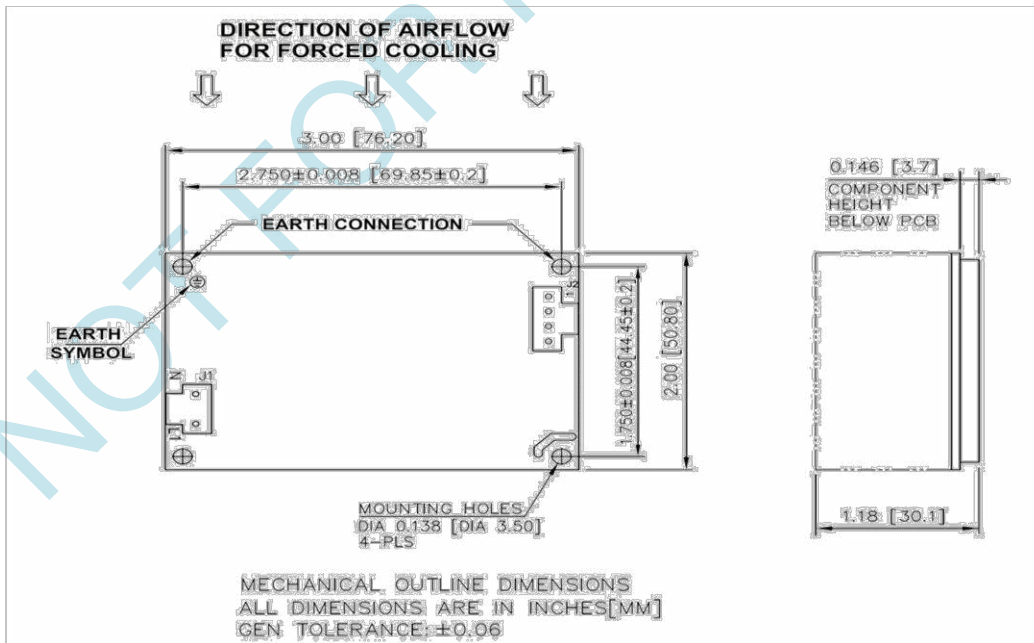
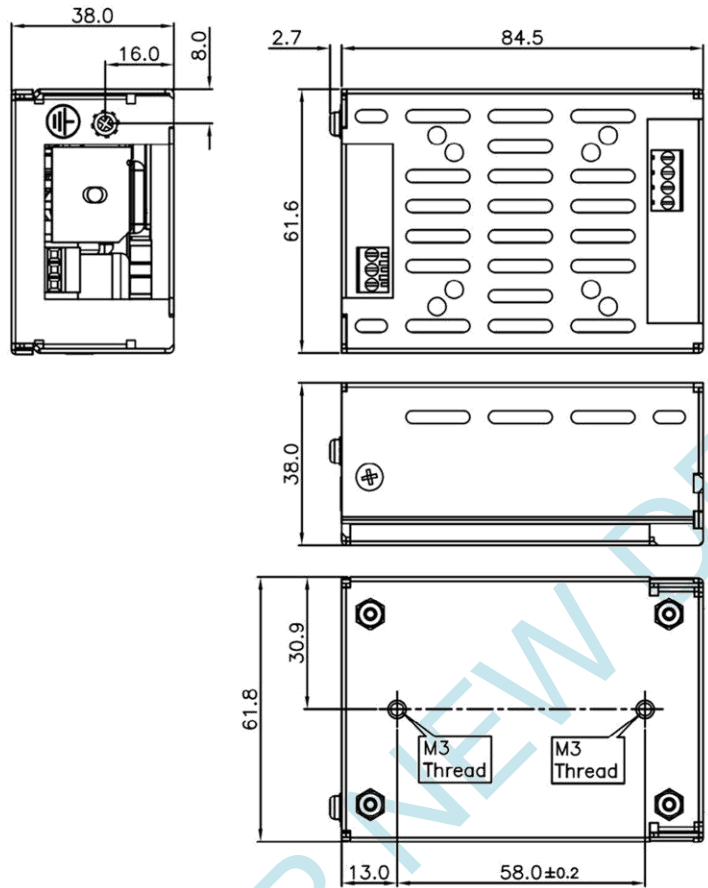


Figure 3. Mechanical Drawing - Molex Header (Option 2)



MECHANICAL OUTLINE DIMENSIONS
 ALL DIMENSIONS ARE IN MM
 GEN TOLERANCE: ± 1.0 MM
 MATERIAL: CRCA/GI 1.0MM THICK
 (POWDER COATING/ PASSIVATION/
 ED COATING BLACK)

Figure 4 - Mechanical Drawing - With Cover Kit

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.