

# MBC41 Series

Ultra Low Profile

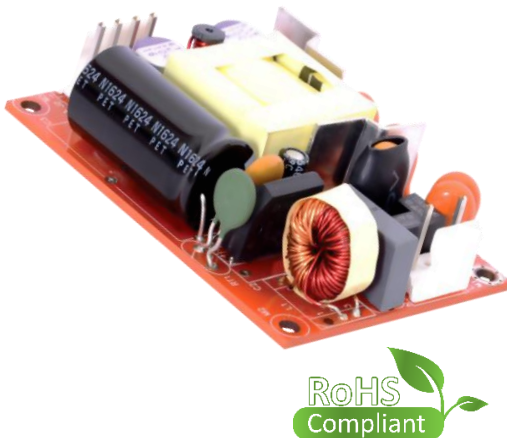
Open Frame Power Supplies

Medical

The MBC41 Series of ultra-low open frame medical power supplies feature a wide universal AC input range of 85 V – 264 VAC, offering output power 40 W with natural convection cooling. They are available in a variety of isolated single output voltages. The MBC41 ultra low profile series is also available in a PCB mount format, facilitating simple embedded integration onto user's main PCB assembly.

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 x 0.75 Inches Form factor
- PCB Mount option available
- 40 Watts Convection
- Approved to EN/IEC 60601-1
- Efficiencies 85% Typical
- -40 to 70 degree operating temperature
- Dual fusing
- 2 million hours, Telcordia -SR332-issue 3 MTBF
- Standby Power < 0.3 W
- Medical (BF) Safety Approvals

## Applications

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

## 1. MODEL SELECTION

| MODEL NUMBER <sup>1</sup> | CONNECTOR                 | VOLTAGE | MAX. LOAD | MIN. LOAD | RIPPLE & NOISE <sup>2</sup> |
|---------------------------|---------------------------|---------|-----------|-----------|-----------------------------|
| MBC41-1T05L               | Screw Terminal            | 5 V     | 5 A       | 0.0 A     | 1.5%                        |
| MBC41-1005L               | Header                    |         |           |           |                             |
| MBC41-1005P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T12L               | Screw Terminal            | 12 V    | 3.33 A    | 0.0 A     | 1%                          |
| MBC41-1012L               | Header                    |         |           |           |                             |
| MBC41-1012P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T15L               | Screw Terminal            | 15 V    | 2.67 A    | 0.0 A     | 1%                          |
| MBC41-1015L               | Header                    |         |           |           |                             |
| MBC41-1015P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T24L               | Screw Terminal            | 24 V    | 1.67 A    | 0.0 A     | 1%                          |
| MBC41-1024L               | Header                    |         |           |           |                             |
| MBC41-1024P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T30L               | Screw Terminal            | 30 V    | 1.33 A    | 0.0 A     | 1%                          |
| MBC41-1030L               | Header                    |         |           |           |                             |
| MBC41-1030P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T48L               | Screw Terminal            | 48 V    | 0.83 A    | 0.0 A     | 1%                          |
| MBC41-1048L               | Header                    |         |           |           |                             |
| MBC41-1048P               | PCB Mount                 |         |           |           |                             |
| MBC41-1T58L               | Screw Terminal            | 58 V    | 0.69 A    | 0.0 A     | 1%                          |
| MBC41-1058L               | Header                    |         |           |           |                             |
| MBC41-1058P               | PCB Mount                 |         |           |           |                             |
| COVER-41-XBC <sup>3</sup> | metal cover kit accessory |         |           |           |                             |

## 2. INPUT SPECIFICATIONS

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

| PARAMETER           | DESCRIPTION / CONDITION                                                      | SPECIFICATION                  |
|---------------------|------------------------------------------------------------------------------|--------------------------------|
| Input Voltage       | Universal                                                                    | 85 - 264 VAC / 390 VDC         |
| Input Frequency     |                                                                              | 47 - 63 Hz                     |
| Input Current       | 115 VAC:<br>230 VAC:                                                         | 0.8 A max.<br>0.4 A max.       |
| No Load Power       | Typical                                                                      | < 0.3 W                        |
| Inrush Current      | 115 VAC:<br>230 VAC:<br>264 VAC:                                             | 25 A<br>45 A<br>75 A           |
| Leakage Current     | Typical (N.A. For Class II Option- without input Earth pin)<br>Touch current | 300 A $\mu$ A<br>< 100 $\mu$ A |
| Switching Frequency | Typical                                                                      | 65 kHz                         |

<sup>1</sup> For Class II Option (without input Earth pin) add suffix: -2 (e.g.: MBC41-1012L-2).

<sup>2</sup> Ripple is peak to peak with 20 MHz bandwidth and 10  $\mu$ F (Tantalum capacitor) in parallel with a 0.1  $\mu$ F capacitor at rated line voltage and load ranges. Output ripple can be more than 10% of the output voltage.

<sup>3</sup> When used in Cover Kit, de-rate output power to 70 % under all operating conditions.  
Cover Kit is not suited for PCB mount version.

### 3. OUTPUT SPECIFICATIONS

| PARAMETER                | DESCRIPTION / CONDITION                                                          | SPECIFICATION         |
|--------------------------|----------------------------------------------------------------------------------|-----------------------|
| Output Power             | Convection cooling                                                               | 40 W                  |
| Efficiency               | Typical                                                                          | 85%                   |
| Hold-up Time             | 230 VAC:                                                                         | 6 ms                  |
| Line Regulation          |                                                                                  | +/-0.5%               |
| Load Regulation          |                                                                                  | +/-1%                 |
| Transient Response       | 25% step load change, at 0.1 A/ $\mu$ s slew rate,<br>50% duty cycle, 50 Hz = 4% | recovery time < 5 ms  |
| Rise Time                | Typical                                                                          | 50 ms                 |
| Set Point Tolerance      |                                                                                  | 2% (3% for 5 V model) |
| Over Current Protection  |                                                                                  | > 110%                |
| Over Voltage Protection  |                                                                                  | 110 to 140%           |
| Short Circuit Protection | Hiccup mode                                                                      |                       |

### 4. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER             | DESCRIPTION / CONDITION                                | SPECIFICATION              |
|-----------------------|--------------------------------------------------------|----------------------------|
| Operating Temperature | Startup is guaranteed with spec. deviation, see Fig. 1 | -40 to +70°C<br>-40 to 0°C |
| Storage Temperature   |                                                        | -40 to +85°C               |
| Relative Humidity     | Non-condensing                                         | 5% to 95%                  |
| Altitude              | Operating:<br>Non-operating:                           | 16,000 ft<br>40,000 ft.    |
| MTBF                  | Telcordia -SR332-issue 3                               | 2 million hours            |

### 5. EMC SPECIFICATIONS

| PARAMETER                          | DESCRIPTION / CONDITION                                                        | SPECIFICATION        |
|------------------------------------|--------------------------------------------------------------------------------|----------------------|
| Conducted Emissions                | EN 55011-B, CISPR22-B, FCC PART15-B                                            | Pass                 |
| Radiated Emissions                 | EN 55011 A;<br>with external core (King core K5B RC 25x12x15-M in input cable) | Pass<br>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 A & B      |

## 6. SAFETY SPECIFICATIONS

| PARAMETER          | DESCRIPTION / CONDITION                                                                                | SPECIFICATION       |
|--------------------|--------------------------------------------------------------------------------------------------------|---------------------|
| Isolation Voltage  | Input to Output: (Medical applications)                                                                | 4000 VAC            |
|                    | Input to GND: (Not Applicable For Class II Option)                                                     | 1500 VAC            |
|                    | Output to GND: for type BF<br>for type B (N/A for Class II Option)                                     | 1500 VAC<br>500 VAC |
| Safety Standard(s) | Approved to the latest edition of the following standards:<br>CSA/UL60601-1, EN60601-1 and IEC60601-1. |                     |
| Agency Approvals   | Nemko, UL, C-UL                                                                                        |                     |
| CE mark            | Complies with LVD Directive                                                                            |                     |

## 7. CONNECTOR & PIN DESCRIPTION

| CONNECTOR           | PIN                     | DESCRIPTION / CONDITION | MANUFACTURER / PN                                             |
|---------------------|-------------------------|-------------------------|---------------------------------------------------------------|
| AC Input Connector  | J1                      | Pin 1                   | AC Line                                                       |
|                     | Screw Terminal / Header | Pin 2                   | Not Fitted                                                    |
|                     |                         | Pin 3                   | AC Neutral                                                    |
| DC Output Connector | J2                      | Pin 1, 2                | V1 +VE                                                        |
|                     | Screw Terminal / Header | Pin 3, 4                | V1 -VE                                                        |
|                     |                         |                         | Tyco: 640445-3<br>Mating: 647402-3; Pins: 3-647409-1 (Header) |
|                     |                         |                         | Tyco: 640445-4<br>Mating: 647402-4; Pins: 3-647409-1          |

## 8. MECHANICAL SPECIFICATIONS

| PARAMETER  | DESCRIPTION / CONDITION                      |
|------------|----------------------------------------------|
| Weight     | approx. 100 g                                |
| Dimensions | 76.2 x 50.8 x 19.05 mm (3 x 2 x 0.75 inches) |

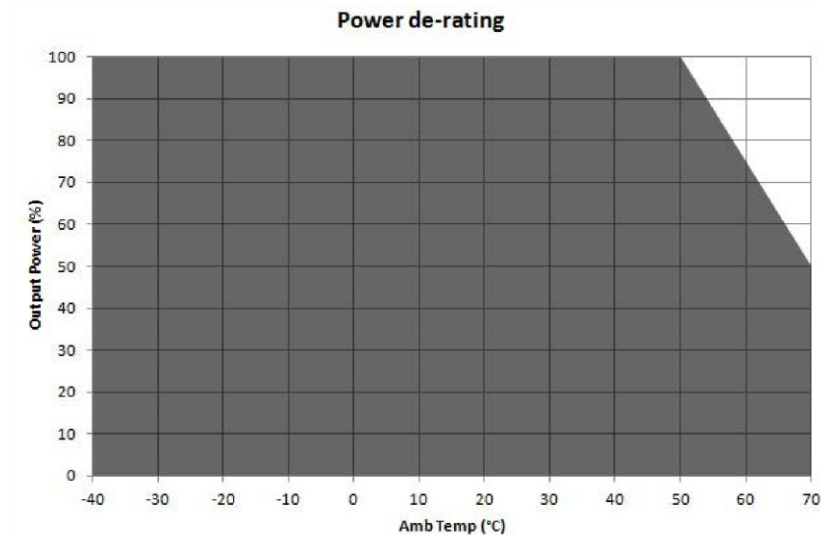


Figure 1. Derating Curve for all Outputs

De-rate linearly from 100% at 50°C to 50% at 70°C

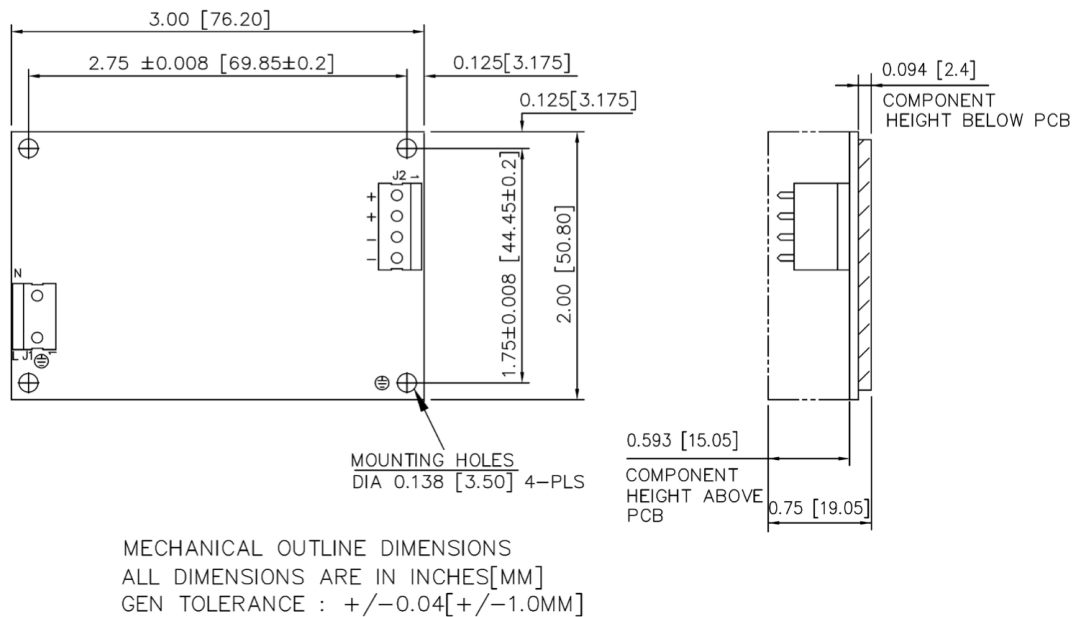


Figure 2. Mechanical Drawing – Option with Header

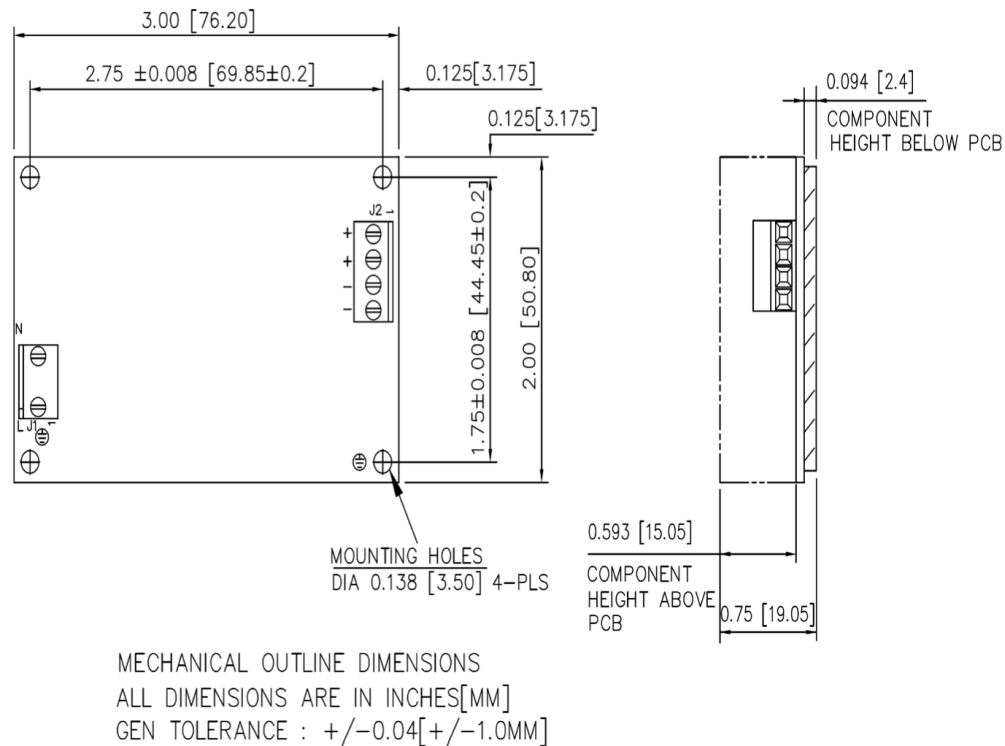


Figure 3. Mechanical Drawing – Option with Screw Terminal

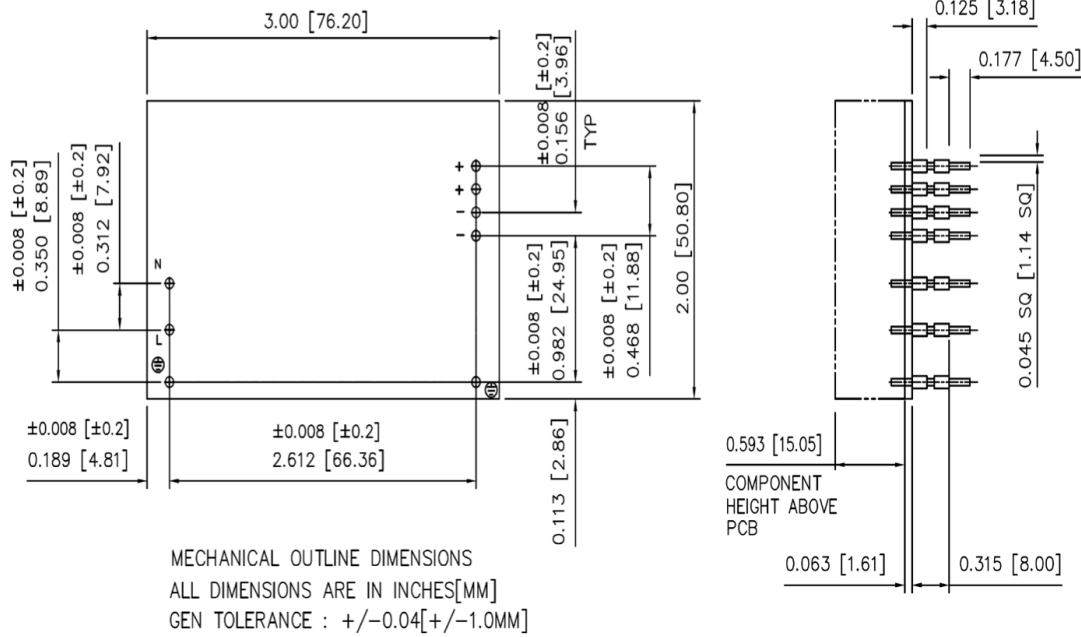


Figure 4. Mechanical Drawing – PCB Mount Option

**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](mailto: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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- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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