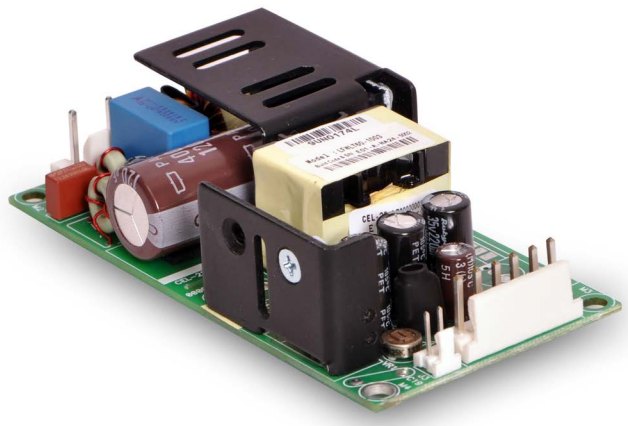
# 60 Watt Medical (MWLT)



## Features

- 4 x 2 x 1.2 inches
- Ultra high efficiency > 85%
- 50–65 W from 1 to 3 outputs
- Low leakage current < 250 µA
- Nemko, UL & CSA approvals to IEC60601
- EN55022–B, CISPR22–B, FCC Part15 Level B, IEC60601–1–2
- No Load Power < 0.3 W
- Class I & Class II options
- Cover kit accessory available
- Meets standard IEC60601-1-2 : 2014 (4th Edition)

## Electrical Specifications

| | | |
|---|---|---|
| AC Input | 90–264 V, Universal | |
| Input Frequency[5] | 47–400 Hz | |
| Input Current | 120 VAC: 1.5 A max. | 230 VAC: 0.75 A max. |
| No Load Power | < 0.3 W for single output models; < 0.5 W for multi output models | |
| Inrush Current | 120 VAC: 30 A max. | 230 VAC: 60 A max. |
| Leakage Current | 120 VAC: < 140 µA | 230 VAC: < 250 µA |
| Efficiency[1] | 120 VAC: 85% typical | 230 VAC: 85% typical |
| Hold-up Time | >10 ms @ 120 VAC typical | |
| Output Power | 50–65 W | |
| Line Regulation | +/–0.3% | |
| Load Regulation | V1: +/–0.5%; V2 & V3: +/–5% | |
| Transient Response | < 10%, 50% to 100% load change, 50/60 Hz, 50% duty cycle, 0.1 A/µs, recovery time < 5 ms | |
| Rise Time | < 100 ms | |
| Set Point Tolerance | V1: +/–3%; V2 & V3: +/–5% | |
| Output Adjustability | V1: +/–10% | |
| Over Current Protection | 130% typical above rating | |
| Over Voltage Protection | 130% typical for V1 only | |
| Short Circuit Protection | Short term, autorecovery | |
| Switching Frequency | Approximately 67 kHz | |
| Operating Temperature | –20 to 70°C, refer derating curve; –20 to 0°C, start-up is guaranteed | |
| Storage Temperature | –40 to +85°C | |
| Relative Humidity | 95% Rh, noncondensing | |
| Altitude | Operating: 10,000 ft.; Nonoperating: 40,000 ft. | |
| MTBF | 1.87m Hours, Telcordia -SR332-issue 3 | |
| Isolation Voltage | 4000 VAC Input to Output, 2MOPP, 1500 VAC Input to Earth, 1MOPP, 500 VAC Output to Earth, 1MOPP | |
| Cooling | Convection | |


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| Model Number | Voltage | Max. Load[2] | Min. Load[6] | Ripple[3] |
|---|---|---|---|---|
| LFMWLT60–1000 | V1=5.1 V | 10.0 A | 0.0 A | 1% |
| LFMWLT60–1001 | V1=12 V | 5.4 A | 0.0A | 1% |
| LFMWLT60–1002 | V1=15 V | 4.33 A | 0.0 A | 1% |
| LFMWLT60–1003 | V1=24 V | 2.7 A | 0.0 A | 1% |
| LFMWLT60–1004 | V1=48 V | 1.35 A | 0.0 A | 1% |
| LFMWLT60–3000 | V1=5.2 V, V2=12.5 V, V3=–12.8 V | V1=8.0 A, V2=3.0 A, V3=0.5 A | V1=0.5 A, V2=0.1 A, V3=0.0 A | 1% |
| LFMWLT60–3001 | V1=5.2 V, V2=24 V, V3=–12.8 V | V1=8.0 A, V2=1.5 A, V3=0.5 A | V1=0.5 A, V2=0.1 A, V3=0.0 A | 1% |
| LFMWLT60–3002 | V1=5.2 V, V2=15 V, V3=–15 V | V1=8.0 A, V2=2.5 A, V3=0.5 A | V1=0.5 A, V2=0.1 A, V3=0.0 A | 1% |
| LFMWLT60–3003 | V1=3.3 V, V2=5.2 V, V3=–12.8 V | V1=6.0 A, V2=3.0 A, V3=0.5 A | V1=1.0 A, V2=0.1 A, V3=0.0 A | V1=1.5%, V2 & V3=1% |
| LFWLT60–CK metal cover kit accessory | | | | |

| Connectors | | |
|---|---|---|
| J1 | Pin 1 | AC LINE |
| | Pin 2 | AC NEUTRAL |
| Spade Connector | | EARTH |
| J2 | Pin 1 | V1 |
| | Pin 2 | V1 |
| | Pin 3 | RTN |
| | Pin 4 | RTN |
| | Pin 5 | V3 |
| | Pin 6 | V2 |
| J3 | Pin 1 | +V1 SENSE |
| | Pin 2 | –V1 SENSE |

## Notes

1. For MWLT60–3003 efficiency is 75% typical.
2. Single output models deliver 65 W, except MWLT60–1000 (50 W).
   Triple output models deliver 60 W, except MWLT60–3003 (45 W).
3. Maximum current per output channel. Do not exceed total output power rating.
4. 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.
5. Safety approved 47–63 Hz.
6. Min Load specified to meet cross regulation.
7. Class II version available, Add "-II" suffix at the end of the Model Number.
8. Specifications are for nominal input voltage, 25°C and max. load unless otherwise stated.
9. Derate output power linearly to 80% from 90 VAC to 80 VAC input.
10. Please refer mechnical outline drawing for height of component above and below PCB for - 1xxx & 3xxx.
11. When used in Cover Kit, de-rate output power to 70 % under all operating conditions.


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| Mechanical Specifications | |
|---|---|
| AC Input Connector (J1) | Molex: 26–60–4030 or equivalent<br>Mating: 09–50–3031; Pins: 08–50–0106 |
| EARTH | Molex: 19705–4301<br>Mating: 190030001 |
| DC Output Connector (J2) | Tyco: 640445–6 or equivalent<br>Mating: 647402–6; Pins: 3–647409–1 |
| Signal Connector (J3) | Molex: 22–23–2021 or equivalent<br>Mating: 22–01–2021 |
| Dimensions | 4.0 x 2.0 x 1.2 inches<br>(101.6 x 50.8 x 30.48 mm) |
| Weight | 150 g |

| EMC* | | |
|---|---|---|
| Parameter | Conditions/Description | Criteria |
| 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 A |
| 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 |

| Safety* | |
|---|---|
| CE Mark | Complies with LVD Directive |
| Approval Agency | Nemko, UL, C–UL |
| Safety Standard(s) | EN60601–1, IEC60601–1 (ed.3),<br>ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1 |
| *Safety File Number(s) | Class I : Nemko: P16220642, NO90138 UL/C-UL: E173812<br>Class II : Nemko: P13216630, NO73023 UL/C-UL: E173812 |


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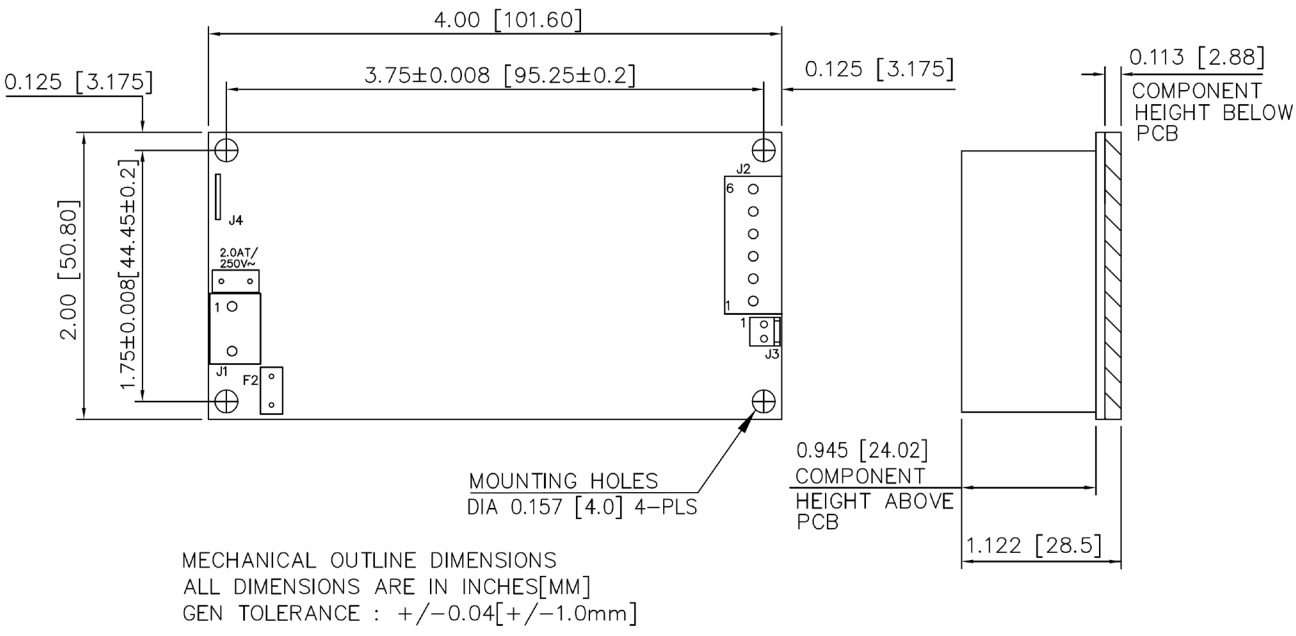
## Derating Curve




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

## Mechanical Drawing

MWLT60 - 1xxx



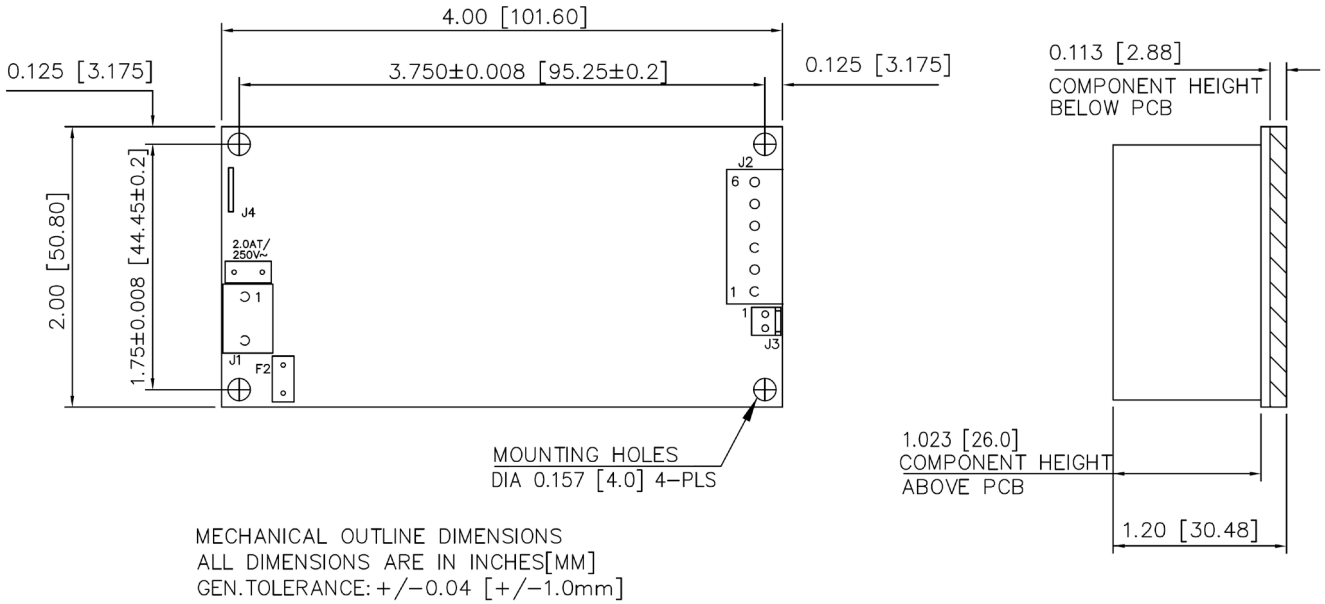

Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following
1. Stand off, used to mount PCB has OD of 5.4 mm max.
2. Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
3. Washer, if used, to have dia of 6.5 mm max.




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## Mechanical Drawing

MWLT60 - 3xxx




MECHANICAL OUTLINE DIMENSIONS
ALL DIMENSIONS ARE IN INCHES[MM]
GEN.TOLERANCE: +/−0.04 [+/−1.0mm]

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.
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