

200 Watt Medical



Features

- 5 x 3 x 1.5 inches form factor
- 200 W with forced-air cooling
- High efficiency > 88%
- 12 V fan output
- 5 V standby output
- Remote sense
- Output voltage adjustability
- Meets standard IEC60601-1-2 : 2014 (4th Edition)

Electrical Specifications

| | | |
|--------------------------|---|------------------------|
| Input Voltage | 90–264 VAC/120–390 VDC, Universal | |
| Input Frequency | 47–63 Hz | |
| Input Current | 120 VAC: 2.4 A max. | 230 VAC: 1.2 A max. |
| No Load Power | 0.8 W | |
| Inrush Current | 120 VAC: 35 A max. | 230 VAC: 65 A max. |
| Leakage Current | 120 VAC: < 150 μ A | 230 VAC: < 300 μ A |
| Efficiency | 120 VAC: 84% typical | 230 VAC: 86% typical |
| Hold-up Time | 120 VAC > 10 ms | 230 VAC > 10 ms |
| Power Factor | 120 VAC: 0.99 | 230 VAC: 0.95 |
| Output Power | 160 to 200 W | |
| Peak Power | 250 W for 0.2 s | |
| Line Regulation | +/-0.5% | |
| Load Regulation | +/-2.0% | |
| Transient Response | < 10%, 50% to 100% load change, 50 Hz, 50% duty cycle, 0.1 A/ μ s, recovery time < 5 ms | |
| Rise Time | < 100 ms | |
| Set Point Tolerance | +/-1% | |
| Output Adjustability | +/-3.0% | |
| Over Current Protection | 110% typical above rating | |
| Over Voltage Protection | 110 to 150% | |
| Short Circuit Protection | Short term, autorecovery | |
| Switching Frequency | PFC converter: Variable, 35–250 kHz; 90 kHz typical Resonant converter: Variable, 35–250 kHz; 90 kHz typical | |
| 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 | 1.6m Hours, Telcordia -SR332-issue 3 | |
| Isolation Voltage | Min. 5900 VDC between input to output | |
| Cooling | Convection: 83 W; 300 LFM: 175 W (5 V model) Convection: 160 W; 300 LFM: 200 W (other models) | |

| Model Number | Description | Voltage | Max. Load ¹ (Convection) | Max. Load ¹ (300 LFM) | Min. Load | Ripple ² |
|---------------------------------------|-----------------------------|---------|--|-------------------------------------|-----------|---------------------|
| LFMWLT200-1000 | Class 1 with Screw Terminal | 5 V | 16.67 A | 35.0 A | 0.0 A | 1% |
| LFMWLT200-1000-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1300 | Class 1 with JST Connector | 5 V | 16.67 A | 26.0 A | 0.0 A | 1% |
| LFMWLT200-1300-2 | Class 2 with JST Connector | | | | | |
| LFMWLT200-1001 | Class 1 with Screw Terminal | 12 V | 13.33 A | 16.67 A | 0.0 A | 1% |
| LFMWLT200-1001-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1301 | Class 1 with JST Connector | 12 V | 13.33 A | 16.67 A | 0.0 A | 1% |
| LFMWLT200-1301-2 | Class 2 with JST Connector | | | | | |
| LFMWLT200-1002 | Class 1 with Screw Terminal | 15 V | 10.67 A | 13.33 A | 0.0 A | 1% |
| LFMWLT200-1002-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1302 | Class 1 with JST Connector | 15 V | 10.67 A | 13.33 A | 0.0 A | 1% |
| LFMWLT200-1302-2 | Class 2 with JST Connector | | | | | |
| LFMWLT200-1003 | Class 1 with Screw Terminal | 24 V | 6.67 A | 8.33 A | 0.0 A | 1% |
| LFMWLT200-1003-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1303 | Class 1 with ST Connector | 24 V | 6.67 A | 8.33 A | 0.0 A | 1% |
| LFMWLT200-1303-2 | Class 2 with JST Connector | | | | | |
| LFMWLT200-1004 | Class 1 with Screw Terminal | 48 V | 3.33 A | 4.17 A | 0.0 A | 1% |
| LFMWLT200-1004-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1304 | Class 1 with JST Connector | 48 V | 3.33 A | 4.17 A | 0.0 A | 1% |
| LFMWLT200-1304-2 | Class 2 with JST Connector | | | | | |
| LFMWLT200-1005 | Class 1 with Screw Terminal | 30 V | 5.33 A | 6.67 A | 0.0 A | 1% |
| LFMWLT200-1005-2 | Class 2 with Screw Terminal | | | | | |
| LFMWLT200-1305 | Class 1 with JST Connector | 30 V | 5.33 A | 6.67 A | 0.0 A | 1% |
| LFMWLT200-1305-2 | Class 2 with JST Connector | | | | | |
| LFWLT200-CK metal cover kit accessory | | | | | | |

Notes

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 μ F (Tantalum capacitor) in parallel with a 0.1 μ F capacitor at rated line voltage and load ranges.
3. Fan output voltage tolerance is +/-20%. During V1 full load, VFAN needs min. 20 mA load to be within regulation band.
4. Peak current for fan output is 1 A.
5. Class 1 products have an Earthing tab and Class 2 products (-2 suffix) have no Earthing tab.
6. Specifications are for nominal input voltage, 25°C and max. load unless otherwise stated.
7. PSU is supplied with J3 housing, pin-4 and pin-6 shorted to enable main output without remote on/off feature.
8. Derate output power linearly to 80% from 90 VAC to 80 VAC input.
9. When used in Cover Kit, de-rate output power to 70 % under all operating conditions.



Innovations in Power

| Connectors | | |
|--|-------------|------------|
| J1 | Pin 1 | AC NEUTRAL |
| | Pin 2 | AC LINE |
| Spade Connector (J4) (Class 1 product only) | | EARTH |
| J2 | Pin 1, 2, 3 | RTN |
| | Pin 4, 5, 6 | V1 |

| Connectors | | |
|------------|-------|------------------------|
| J3 | Pin 1 | +VE REMOTE SENSE |
| | Pin 2 | VFAN (12 V/0.5 A) |
| | Pin 3 | -VE REMOTE SENSE |
| | Pin 4 | REMOTE ON/OFF |
| | Pin 5 | VSTBY (5 V/1 A, +/-5%) |
| | Pin 6 | RTN |
| | Pin 7 | POWER FAIL |
| | Pin 8 | POWER GOOD |

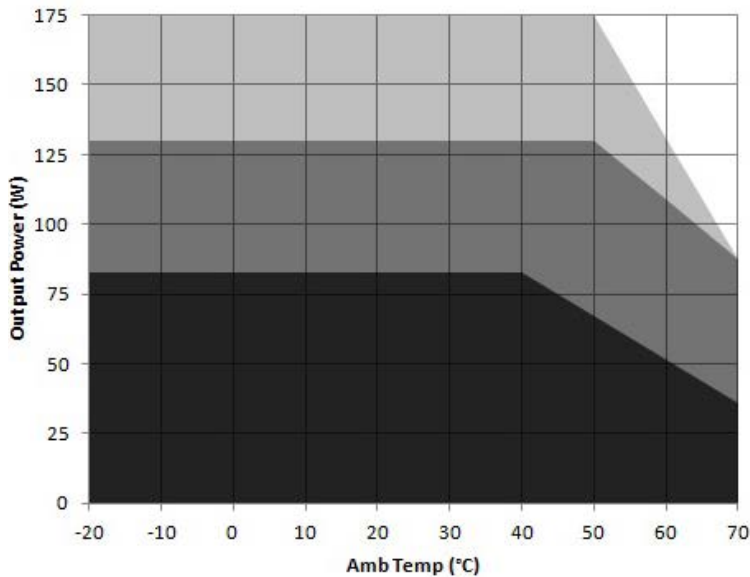
| Mechanical Specifications | |
|------------------------------------|---|
| AC Input Connector (J1) | Molex: 26-60-4030 or equivalent Mating: 09-50-3031; Pins: 08-50-0106 |
| EARTH (J4) | Molex: 19705-4301 or equivalent; Mating: 190030001 |
| DC Output Connector (J2) | Option 1: Tyco: 2-1776112-3 or 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 |
| Signal Connector (J3) | Molex: 22-23-2081 or equivalent Mating: 22-01-2087, Pins: 08-50-0113 |
| Dimensions | 5.0 x 3.0 x 1.5 inches (127.0 x 76.2 x 38.1 mm) |
| Weight | 325 g |
| EMC | |
| Parameter | Conditions/Description |
| Conducted Emissions | EN 55011-B, CISPR22-B, FCC PART15-B |
| Radiated Emissions | EN 55011 B |
| Input Current Harmonics | EN 61000-3-2 |
| Voltage Fluctuation and Flicker | EN 61000-3-3 |
| ESD Immunity | EN 61000-4-2 |
| Radiated Field Immunity | EN 61000-4-3 |
| Electrical Fast Transient Immunity | EN 61000-4-4 |
| Surge Immunity | EN 61000-4-5 |
| Conducted Immunity | EN 61000-4-6 |
| Magnetic Field Immunity | EN 61000-4-8 |
| Voltage dips, interruptions | EN 61000-4-11 |
| Safety | |
| CE Mark | Complies with LVD Directive |
| Approval Agency | Nemko, UL, C-UL |
| Safety Standard(s) | EN60601-1, IEC60601-1 (ed.3), ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1 |
| Safety File Number(s) | Nemko: P15220606; CB: N090000; UL: E173812 |

Signal

| | |
|-------------------|---|
| Power Good Signal | TTL signal goes high after main output is within regulation band, delay is 0.1 to 0.3 s |
| Power Fail Signal | TTL signal goes low 1ms advance before output goes out of regulation due to mains failure |
| Remote Sense | Compensates for 200 mV drop |
| Remote on/off | To turn on PSU short remote pin to ground |

Derating Curve

Power de-rating : 5V

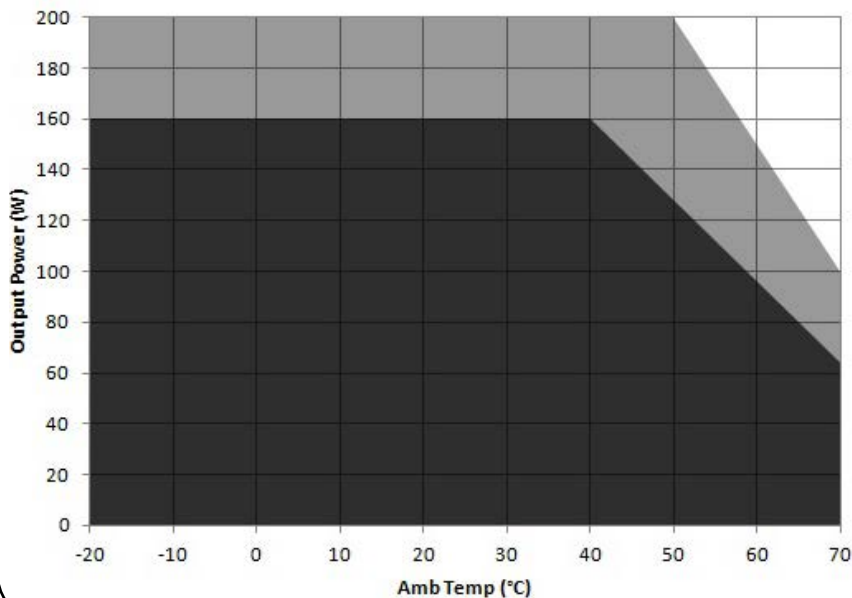


Convection load: 83W up to 40 °C
De-rate above 40 °C @ 1.89% per °C

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

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

Power de-rating : 12V, 15V, 24V, 30V, 48V



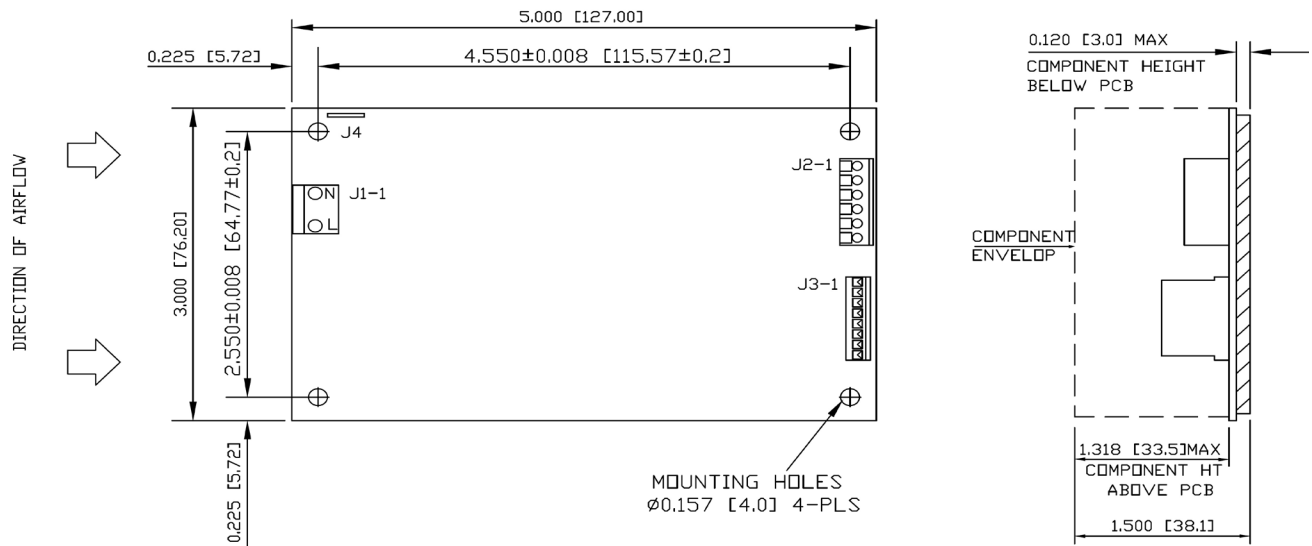
Convection load: 160W up to 40 °C
De-rate above 40 °C @ 2% per °C

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



Innovations in Power

Mechanical Drawing



MECHANICAL OUTLINE DIMENSIONS
 ALL DIMENSION ARE IN INCHES[MM]
 GENERAL TOLERANCE: ± 0.02 [0.5mm]

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.