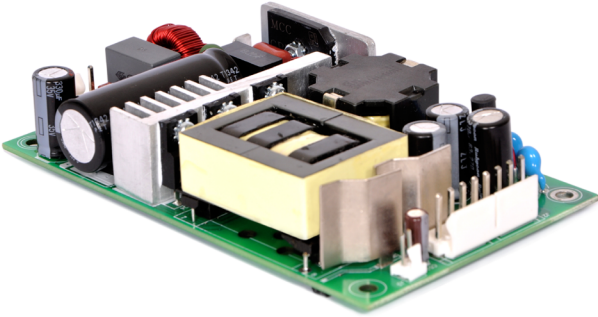


# MWLP350 Medical



## Features

- 5 x 3 x 1 Inches Form factor
- 350 Watts with Forced Air Cooling & 200 Watts Convection Cooling
- Efficiencies upto 94%
- -40 to 70 degree operating temperature\*
- 12V Fan Output, Thermal Shut-Down feature
- > 800K Hours MTBF
- Standby Power < 0.5W
- Approved to EN60601-1 3rd Edition
- Medical (BF) Safety Approvals

## Electrical Specifications

Input Voltage	90-264 VAC/390 VDC, Universal (Derate from 100% at 100V AC to 90% at 90V AC)	
Input Frequency	47-63 Hz	
Input Current	115 VAC: 3.6 A max.	230 VAC: 1.8 A max.
No Load Power	less than 0.5W typical	
Inrush Current	115 VAC – 25 A, 230 VAC – 45 A, 264 VAC – 75 A	
Leakage Current	300 uA Typical	Touch current <100uA
Efficiency	94%(48V,58V), 93%(24V,30V), 92%(12V,15V)	
Hold-up Time	Full Load : 8 ms typical	Convection Load : 14 ms typical
Power Factor	exceeds 0.95 with Full Load	
Output Power	upto 350W with 375 LFM, upto 200W Convection	
Line Regulation	+/-0.5%	
Load Regulation	+/-1%	
Transient Response	50-100% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50Hz=5% , recovery time < 5 ms	
Rise Time	55 ms typical	
Set Point Tolerance	+/-1%	
Over Current Protection	>110%, Hiccup mode / Auto Recovery	
Over Voltage Protection	110 to 140%, Hiccup mode / Auto Recovery	
Short Circuit Protection	Hiccup mode / Auto Recovery	
Switching Frequency	PFC – 70 to 130 KHz ,PWM – 50-80 KHz	
Operating Temperature	-40 to +70°C, * -40 to 0°C startup is guaranteed with spec deviation ( ref note 6)	
Storage Temperature	-40 to +85°C	
Relative Humidity	5% to 95%, noncondensing	
Altitude	Operating: 10,000 ft.; Nonoperating: 40,000 ft.	
MTBF	> 800 kh; Bellcore TR-332	
Isolation Voltage	Input to Output – 4000 VAC medical applications. Input to GND - 1500 VAC , Output to GND- 1500VAC for type BF , 500 VAC for type B	
Cooling	350W with 375 LFM forced air cooling at 100 to 264VAC 200W with natural convection cooling at 100 to 264VAC.	

Model Number	Description	Voltage	Max. Load (Convection)	Max. Load (375 LFM)	Min. Load	Ripple <sup>1</sup>
LFMWLP350-1001	with Screw Terminal	12V	15A	25A	0.0A	1%
LFMWLP350-1002	with Screw Terminal	15V	12A	21.67A	0.0A	1%
LFMWLP350-1003	with Screw Terminal	24V	8.33A	14.60A	0.0A	1%
LFMWLP350-1303	with Molex Connector					
LFMWLP350-1004	with Screw Terminal	48V	4.17A	7.30A	0.0A	1%
LFMWLP350-1304	with Molex Connector					
LFMWLP350-1005	with Screw Terminal	30V	6.67A	11.67A	0.0A	1%
LFMWLP350-1305	with Molex Connector					
LFMWLP350-1006	with Screw Terminal	58V	3.45A	6.04A	0.0A	1%
LFMWLP350-1306	with Molex Connector					
LFWLP350-CK metal cover kit accessory						

Connectors			
J1	Pin 1	AC NEUTRAL	
	Pin 2	NOT FITTED	
	Pin 3	AC LINE	
J2 Option 1 (Screw Terminal)	Pin 1	V1 -VE	
	Pin 2	V1 + VE	
J2 Option 2 (Molex Connector)	Pin 1,2,3,4	V1 -VE	
	Pin 5,6,7,8	V1 + VE	
J3	Pin 1	FAN -VE	
	Pin 2	FAN +VE	

## Notes

1. 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.
2. Combined output power of main output, fan supply shall not exceed max. Power rating.
3. Fan supply output voltage tolerance including set point accuracy, line and load regulation is +/-10% and Ripple and noise is less than 10%.
4. Specifications are for nominal input voltage, 25°C unless otherwise stated.
5. Thermal shutdown feature : The power supply goes in hiccup mode when the temperature of PCB exceeds 110 °C (+/-10 °C).
6. Output ripple can be more than 10% of the output voltage.

## Mechanical Specifications

AC Input Connector (J1)	Molex: 26-60-4030 Mating: 09-50-3031; Pins: 08-50-0106
Earth (J4)	Molex: 19705-4301 Mating: 19003-0001
DC Output Connector (J2) Option 1 (Screw Terminal)	6-32 inches Screw Pan HD Mating: 16 AWG wire crimped to Ring Tongue Terminal AMP: 8-31886-1
DC Output Connector (J2) Option 2 (Molex Connector)	Molex: 26-60-4080 Mating: 09-50-3081; Pins: 08-50-0106
Aux (Fan) Output(J3)	AMP :640456-2 Mating: 640440-2
Dimensions	5 x 3 x 1 inches (127 x 76.2x 25.4 mm)
Weight	300 gm approx

## EMC

CE Mark	Complies with LVD Directive
Conducted Emissions	EN55022-B, CISPR22-B, FCC PART15-B
Static Discharge	EN61000-4-2, Level-3
RF Field Susceptibility	EN61000-4-3, Level-3
Fast Transients/Bursts	EN61000-4-4, Level-3
Radiated Emissions	Level A radiated, Level B radiated with external core (type TBD)
Surge Susceptibility	EN61000-4-5, Level-3
Harmonic Current	EN61000-3-2, Class D

## Safety

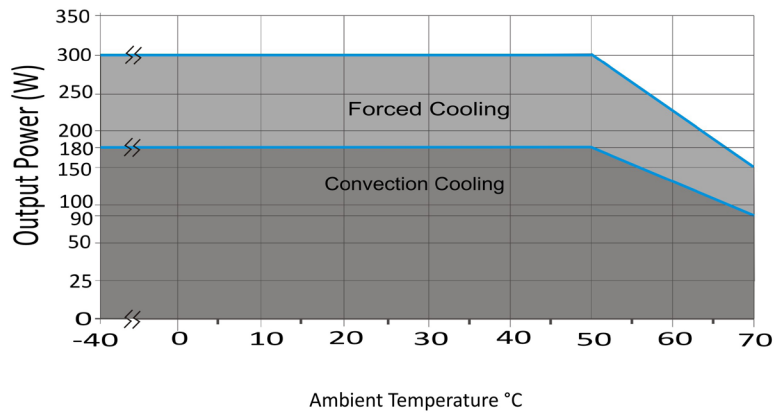
Safety Standard(s)	EN60601-1, IEC 60601-1 (ed.3), ANSI / AAMI ES 60601 - 1, CSA C22.2 No. 60601-1
Approval Agency	Nemko, UL, C-UL
Safety File Number(s)	(Pending)



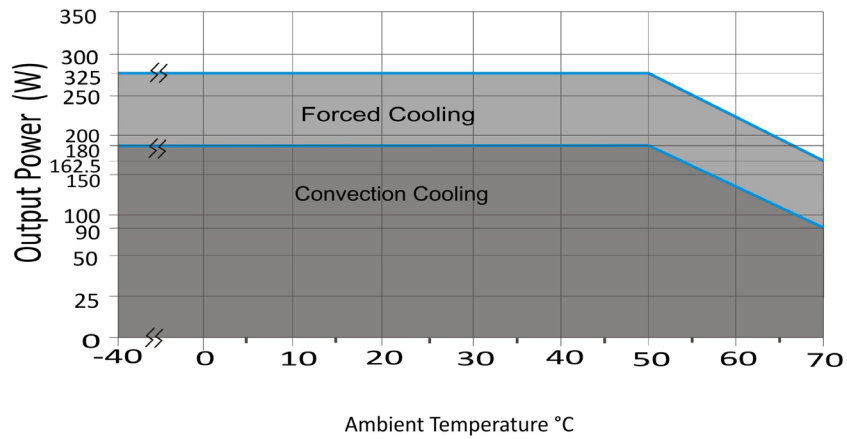
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## Derating Curve

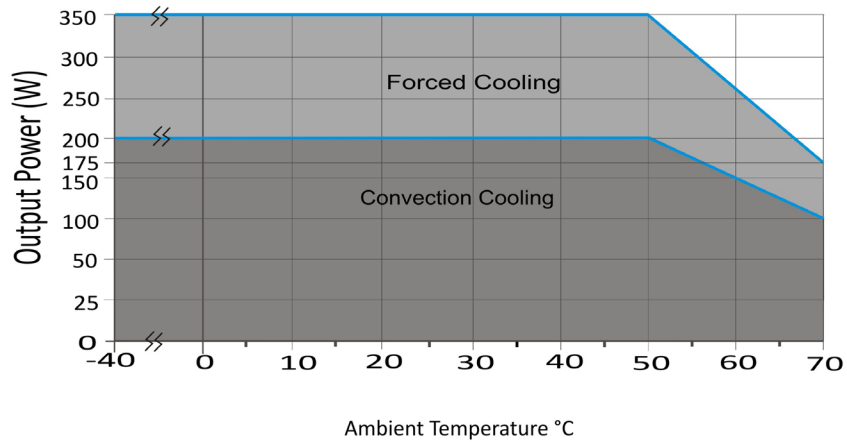
12V Output



15V Output



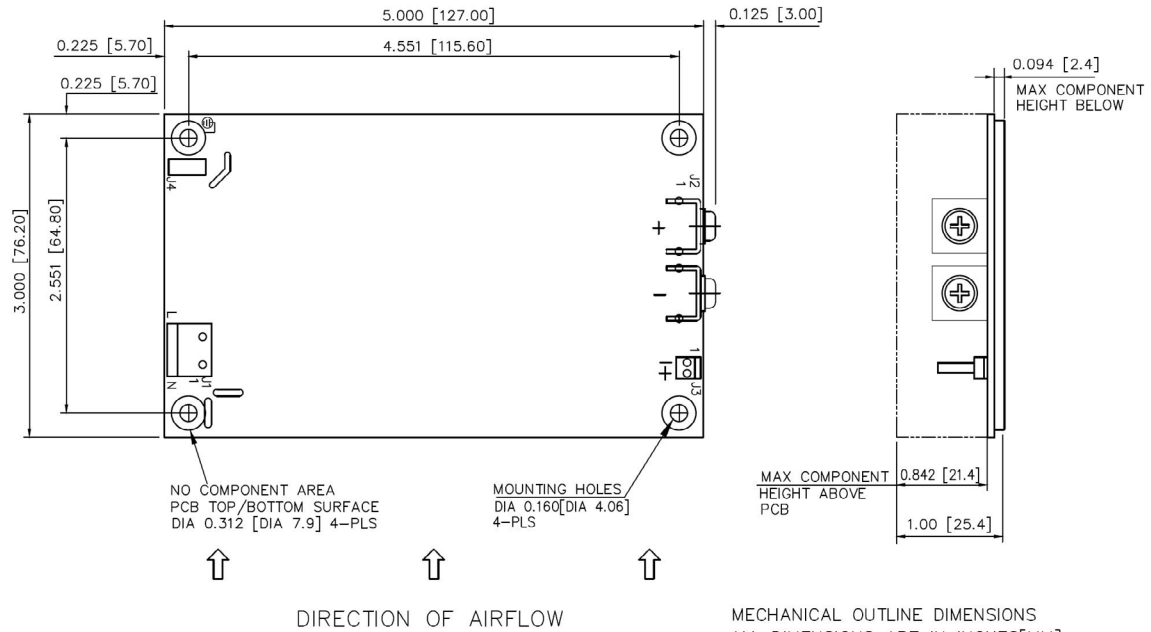
24V, 30V, 48V, 58V Output



Derating Curve Note : Between -40 to 0°C startup is guaranteed with spec deviation ( ref note 6)

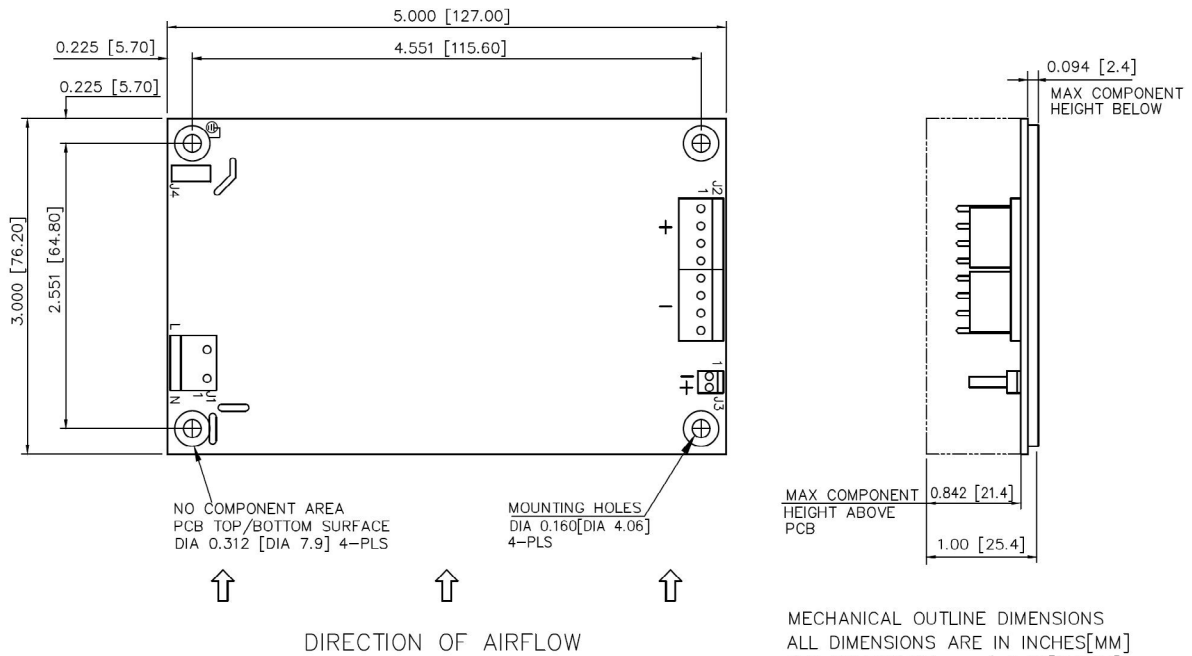
## Mechanical Drawing

### Option 1 All Outputs.



MECHANICAL OUTLINE DIMENSIONS  
 ALL DIMENSIONS ARE IN INCHES[MM]  
 GEN TOLERANCE : +/-0.02[0.5MM]

### Option 2 24V/30V/48V/58V Output only.



MECHANICAL OUTLINE DIMENSIONS  
 ALL DIMENSIONS ARE IN INCHES[MM]  
 GEN TOLERANCE : +/-0.02[0.5MM]