

## Product Specification

Universal AC Input with PFC  
2" x 3" Footprint  
Single Output

## Key Product Features

- EN60601-1 3rd Ed. (2 MOPP) Safety Approved
- Class I or Class II input
- BF Leakage Current
- High Power Density—17W/in<sup>3</sup>
- Active PFC
- High Efficiency—up to 93% typ.

## Safety and EMC

- CSA/UL 60601-1-1 3rd Ed. Safety
- IEC/EN60601-1 Edition 3.0 A1
- ANSI/AAMI ES60601-1
- CAN/CSA C22.2 No. 60601-1
- Nemko, UL, cUL and CE Marks
- EN50022 (CISPR 22) FCC Part 15 Conducted—Level B
- EN61000-3-2 Class D Harmonics
- EN61000-4-2, 3, 4, 5 Level 3 Immunity

# OFM120 Series

120 Watt High Density Medical Grade AC/DC Power Supply



## Description

The OFM120 Series of open frame switching power supplies utilizes a highly advanced circuit topology to deliver 120 Watts in an industry standard package that has a 3.00 x 2.00 inch footprint and 1.18 in. height. The series has been designed to meet the requirements of Medical, Telecom and Industrial applications and operates over the universal AC input range with active PFC. These supplies feature cutting edge efficiency and power density and are fully and compliant with worldwide safety and EMC standards.

## Ratings

Input Voltage Range—AC Input	85–264 VAC (see derating curves)
Input Frequency Range	47–63Hz
Input Current	1.2A at 115VAC, 0.65A at 230VAC
Output Power—forced convection	120W with 300LFM airflow—see derating curves
Output Power—natural convection	100W natural convection—see derating curves
Operating Temperature Range	-40°C to +50°C, to +70°C with derating
Power Factor	>0.95 at full load

## Model Selection

Model	Output Voltage, VDC	Rated Current, A (300 LFM Convection)	Rated Current, A (Natural Convection)
OFM120-Z120-W	12.0	10.0	8.33
OFM120-Z150-W	15.0	8.0	6.66
OFM120-Z240-W	24.0	5.0	4.16
OFM120-Z300-W	30.0	4.0	3.33
OFM120-Z480-W	48.0	2.5	2.08
OFM120-Z580-W	58.0	2.07	1.72
OF120-CK	Cover Kit		

Complete model number as follows:

Replace Z in model number with 2 for Molex 172286 type header connectors or 1 for Euro Style Terminal Blocks. Replace W in model number with II for class II input option or leave blank for class I input.

## Electrical Specifications

### Input

Input Voltage	85-264 VAC/390 VDC5, Universal (see derating under output power)
Input Frequency	47-63 Hz
Input Current	115 VAC: 1.2 A max.; 230 VAC: 0.65 A max.
No Load Power	less than 0.3W typical
Inrush Current	115 VAC – 25 A, 230 VAC – 45 A, 264 VAC – 75 A
Leakage Current	300 uA Typical, (N.A. For Class II Option), Touch current <100uA
Efficiency	93% (48V,58V), 91% (24V,30V), 90% (12V,15V)
Hold-up Time	10 ms typical
Power Factor	exceeds 0.95 with Full Load, Active PFC

### Output

Output Voltage Adjustability	+/-3%
Line Regulation	+/-0.5%
Load Regulation	+/-1%
Transient Response	25% step load change, at 0.1A/uS slew rate, 50% duty cycle, 50Hz=4% , recovery time < 5 ms
Rise Time	55ms typical
Set Point Tolerance	+/-1%
Over Current Protection	Typ 110%
Over Voltage Protection	110 to 140%, Latch type (AC recycling required)
Short Circuit Protection	Hiccup mode

## EMC and Safety Certifications

### 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 (King core K5B RC 25x12x15-M in input cable with 5 Turns)
Surge Susceptibility	EN61000-4-5, Level-3
Harmonic Current	EN61000-3-2, Class D

## Safety

Safety Standard(s)	IEC/EN 60601-1 Edition 3.0 + AM1, ANSI/AAMI ES60601-1 and CAN/CSA -C22.2 No. 60601-1
Approval Agency	Nemko, UL, C-UL
Isolation Voltage	Input to Output—4000 VAC medical applications. Input to GND—1500 VAC (Not Applicable For Class II Option) Output to GND—1500VAC for type BF , 500 VAC for type B (Not Applicable For Class II Option)
Protection Level	Primary to Secondary: 2 MOPP, Primary to Earth: 1 MOPP, Secondary to Earth: 1 MOPP

## Environmental Specifications

Operating Temperature*	-40 to +70°C
Storage Temperature	-40 to +85°C
Relative Humidity	5% to 95%, noncondensing
Altitude	Operating: 16,000 ft.; Nonoperating: 40,000 ft.
MTBF	>3.00m Hours, Telcordia -SR332-issue 3

## Mechanical Specifications

AC Input Connector (J1) Option 1	Molex: 39357-0003, Tyco-2-1776112-3
AC Input Connector (J1) Option 2	Molex: 1722861103 (Mating conn: Molex 172256100)
DC Output Connector (J2) Option 1	Molex: 39357-0004, Tyco-2-1776112-4
DC Output Connector (J2) Option 2	Molex: 1722861104 (Mating conn: Molex 1722561004)
Dimensions	3 x 2 x 1.18 inches (76.2 x 50.8 x 30.1mm)
Weight	200gm Max.

## Connector Pin Assignments

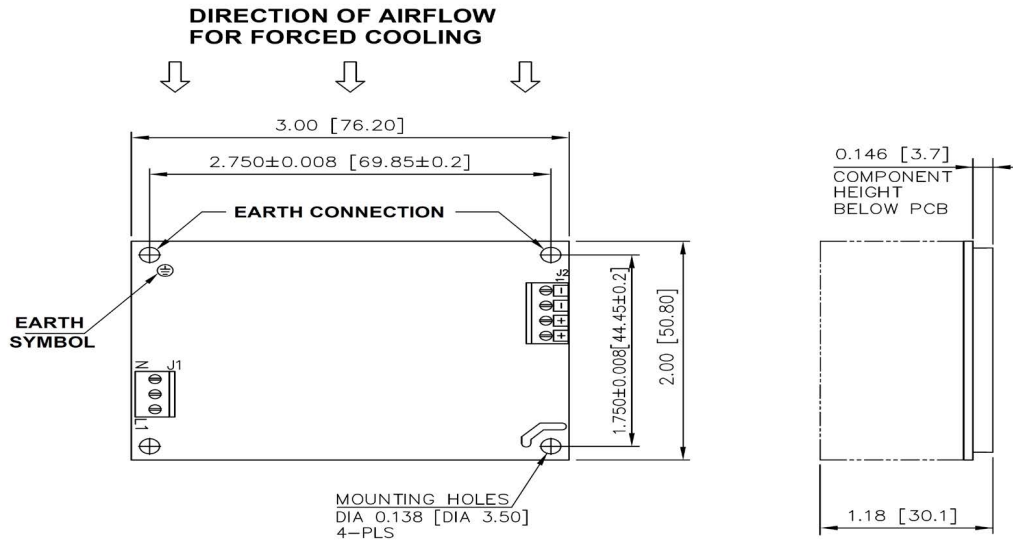
Connector	Pin	Function
J1	1	AC Line
	2	Not Provided
	3	AC Neutral
J2	1	-Vout
	2	-Vout
	3	+ Vout
	4	+ Vout

### 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. Class II means without input Earth connection.
3. Specifications are for nominal input voltage, 25°C unless otherwise stated.
4. -40 to 0°C startup is guaranteed with spec deviation in output ripple and voltage regulation.
5. Functional, not approved.

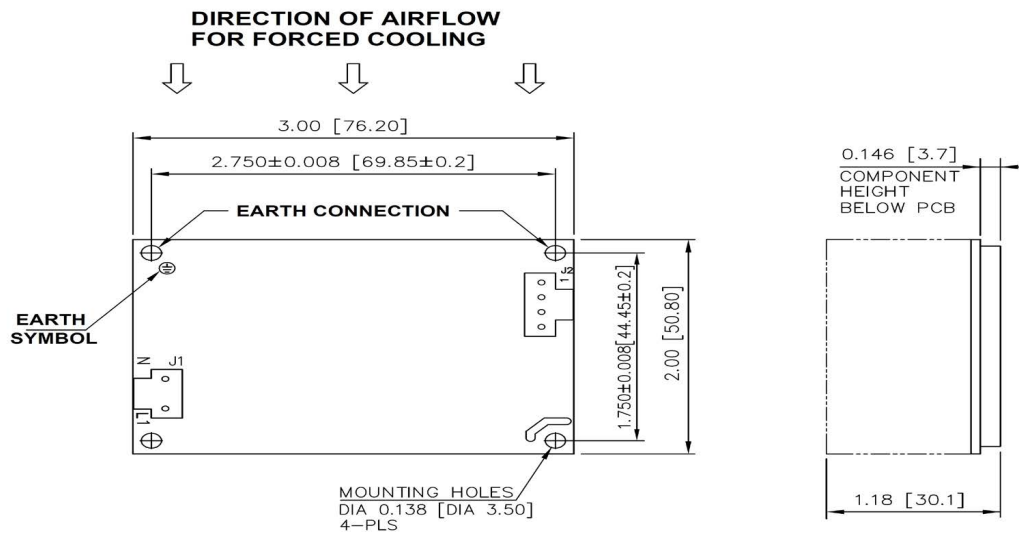
## Mechanical Outline

### Option -1



MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN INCHES[MM]  
GEN TOLERANCE: ±0.06

### Option -2



MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN INCHES[MM]  
GEN TOLERANCE: ±0.06

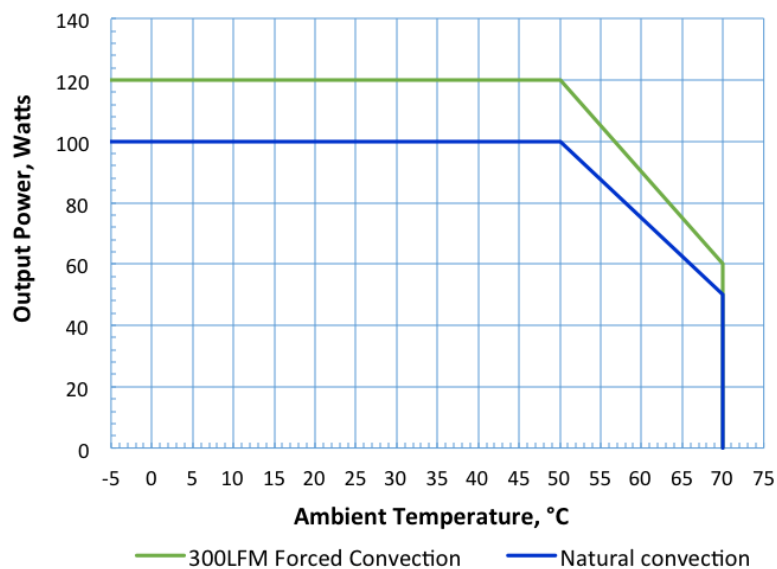
Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

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.

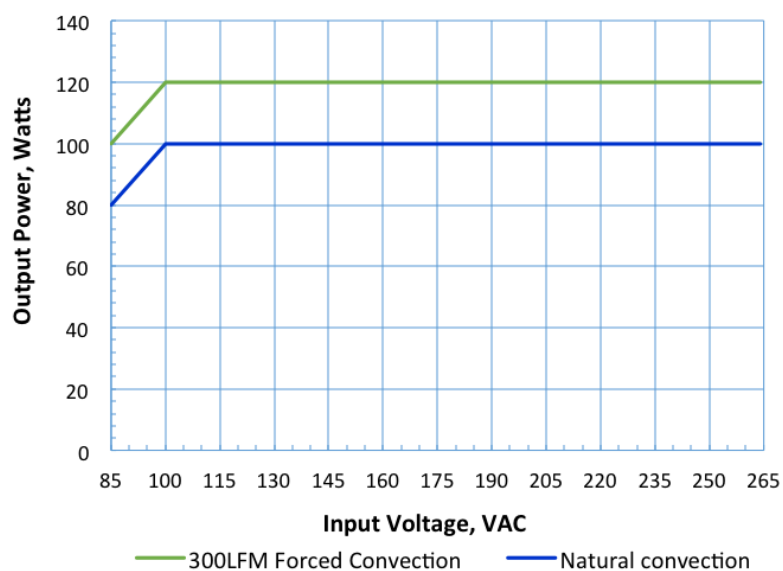


## Derating Curve

### Output Power Temperature Derating OFM120-ZXXX-W



### Output Power Line Voltage Derating OFM120-ZXXX-W



## Key Product Features

- Noncorrosive
- Easy assembly
- Low weight
- Fully safe

# OF120-CK Cover Kit

120 Watt High Density AC/DC Power Supply



## Derating Guidelines

OF120/OFM120: Ambient > 50°C, derate by 50% to 70°C. 300 LFM air flow to be maintained.

## Contents

Mounting Base, Cover, Insulator, Fixing Screws

## Mechanical Dimensions

Cover and Base Material	EG(Zintec)/CRCA/GI 1.0mm thick (Powder coating/ Passivation/ ED coating black)
Marked	A: PCB MTG; B: COVER MTG; C: SYSTEM MTG, M3 Thread ; D : EARTH CONNECTION

All dimensions are in mm. General tolerance :+/-1.0

## Mechanical Outline

