



electronic powersolutions

# CFM60M SERIES

## 60W MEDICAL OPEN FRAME AC-DC MODULES



### Features

- \* Universal Input Range 90~264V<sub>ac</sub>
- \* 2"x 4" Size
- \* Efficiency to 90%
- \* Continuous Short Circuit Protection
- \* No Load Power Consumption<0.5W
- \* Meets EN55011 and EN55032 Class B
- \* IEC/EN/UL 60601-1 2MOPP Approval
- \* Meets IEC/EN60335-1
- \* Meets Class I



MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE 2	VOLTAGE ACCURACY NOTE 1	VOLTAGE ADJ. Range	LINE REGULATION NOTE 3	LOAD REGULATION NOTE 4	% EFF (Typ.) NOTE 5
CFM60M050	5 V	8 A	1%	±1%	4.75~5.25	±0.5%	±1%	82%
CFM60M120	12 V	5 A	1%	±1%	11.4~12.6	±0.5%	±1%	87%
CFM60M150	15 V	4 A	1%	±1%	14.25~15.75	±0.5%	±1%	88%
CFM60M240	24 V	2.5 A	1%	±1%	22.8~25.2	±0.5%	±1%	89%
CFM60M480	48 V	1.25 A	1%	±1%	45.6~50.4	±0.5%	±1%	90%

## Specifications

### INPUT SPECIFICATIONS:

Voltage ..... 90~264V<sub>ac</sub>  
 ..... 120~370V<sub>dc</sub>  
 Frequency ..... 47 to 63Hz  
 Inrush Current ..... Cold Start@25°C ..... 75A max. @240V<sub>ac</sub>  
 Input Current ..... 100V<sub>ac</sub>/1.6A max., 240V<sub>ac</sub>/0.8A max.  
 Leakage Current ..... 100uA max.

### OUTPUT SPECIFICATIONS:

Hold-up Time ..... 16ms typ. @115V<sub>ac</sub>  
 Short Circuit Protection ..... Hiccup Mode (Auto Recover)  
 Over Voltage Protection ..... TVS Component to Clamp  
 Temperature Coefficient ..... ±0.05%/°C max.

### GENERAL SPECIFICATIONS:

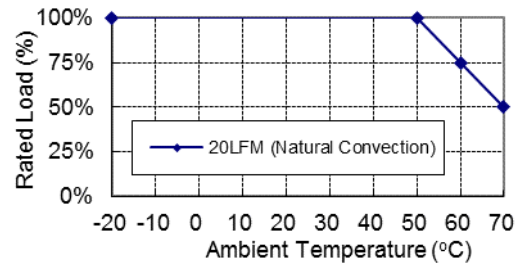
Isolation ..... Input to Output = 4000V<sub>ac</sub> (5,656V<sub>dc</sub>)  
 Operating Temperature (note9) ..... -20 ~ 70°C (See Derating Curve)  
 Storage Temperature ..... -20~85°C  
 Humidity ..... 93% RH max. Non-Condensing  
 Cooling ..... Natural Convection  
 Switching Frequency ..... 65kHz Typical  
 MTBF ..... MIL-HDBK-217F, GB, 25°C/115V<sub>ac</sub> ..... 200khrs min.  
 Altitude ..... 3000m  
 Dimensions ..... 4.000x2.000x1.100 inches (101.60x50.80x27.94 mm)  
 CFM60MXXX-CA ..... 4.606x2.362x1.575 inches (117.00x50.80x40.00 mm)  
 Weight ..... 125g

### SAFETY AND EMC:

Emission and Immunity ..... EN60601-1-2:2015 ed. 4.0  
 EN55032 Class B, EN55011, EN55024, FCC CFR 47 Part 15, 18  
 EN61204-3, EN61000-6-1, 3, EN61000-3-2, 3  
 Safety ..... Class I, IEC60601-1:2005+A1:2012 ed. 3.1  
 EN60601-1:2006/A1:2003 ed. 3.1, UL ANSI/AAMI ES60601-1:2005

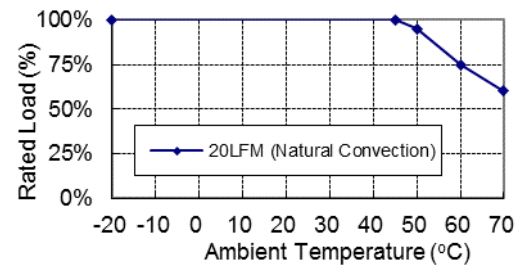
## CFM60M Series Derating Curve

### Open Frame Versions:



### Covered Versions:

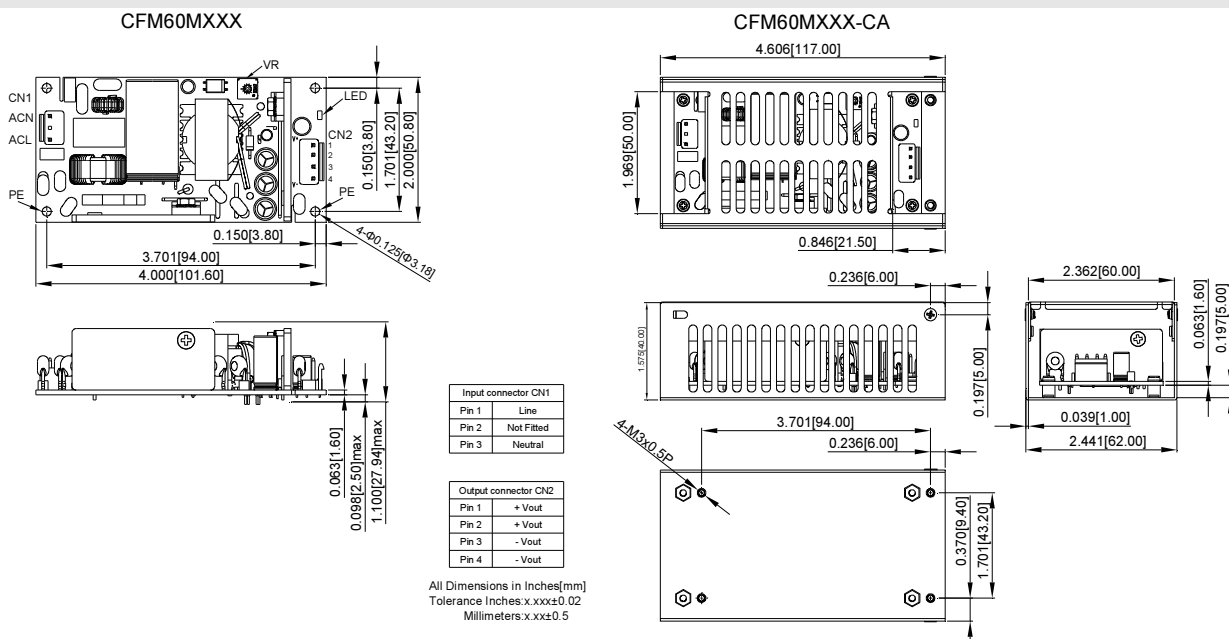
CFM60M050-CA



### NOTE:

1. Voltage accuracy is set at full load and 25°C Ta.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple&noise measuring @20MHz BW.
3. Line regulation is measured from 100V<sub>ac</sub> to 240V<sub>ac</sub> with full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 V<sub>ac</sub> and full load at 25°C.
6. Standard input and output connectors (CN1 and CN2) wafer with TAIWAN KING PIN TERMINAL PVHI series and mate with JST housing VHR series and JST SVH-21/41T-P1.1 series crimp terminal or Equivalent.
7. Optional Input and output connectors (CN1 and CN2) wafer with LONG CHU P3060 series and mate with MOLEX housing 5195 series and MOLEX 5194 series crimp terminal or equivalent.
8. Safety approvals do not apply to the covered versions, only to the open frame versions.
9. Others model refer to application note.

## Mechanical Specification



Typical at 25°C, nominal line and 75% load, unless otherwise Specified

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