



CFM40M Series

Application Note V13

AC-DC Switching Power Module CFM40M Series APPLICATION NOTE



Approved By:

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CFM40M Series

Application Note V13

Content

1. INTRODUCTION	3
2. ELECTRICAL BLOCK DIAGRAM	3
3. MAIN FEATURES AND FUNCTIONS	4
3.1 <i>Operating Temperature Range</i>	4
3.2 <i>Output Protection (Over Current Protection)</i>	4
4. APPLICATIONS	4
4.1 <i>Test Set-Up</i>	4
4.2 <i>Output Ripple and Noise Measurement</i>	4
4.3 <i>Installation Instruction</i>	5
5. PACKING INFORMATION	6



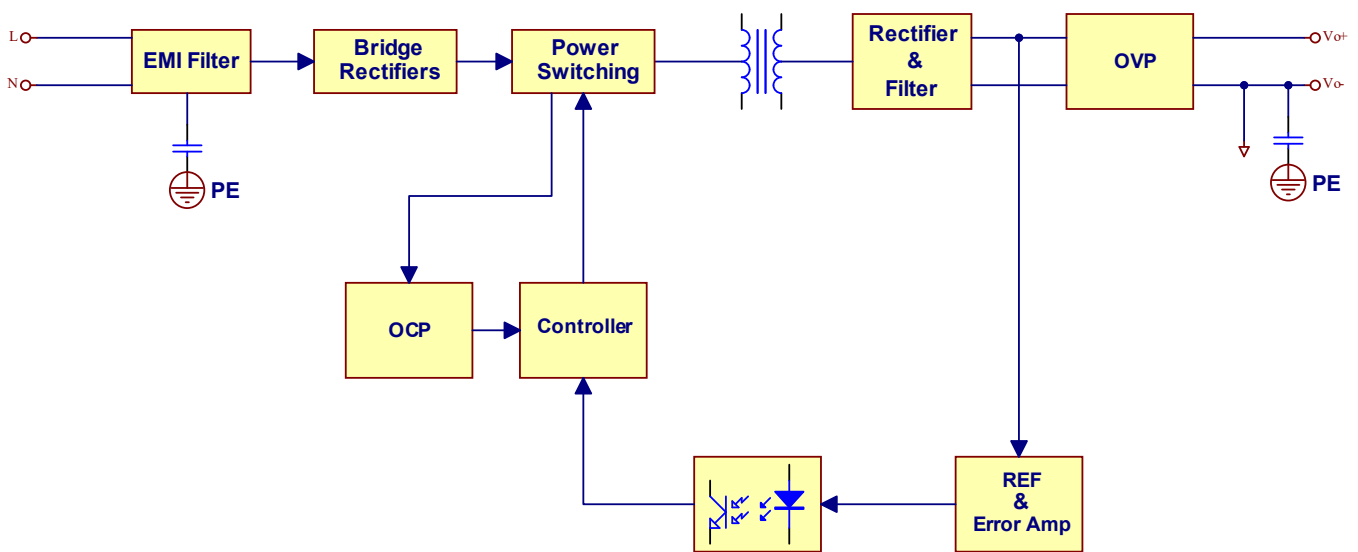
CFM40M Series

Application Note V13

1. Introduction

This application note describes the features and functions of Cincon's CFM40M series of medical open frame, Isolated AC-DC Converters. These are highly efficient, reliable and compact, high power density, single output AC/DC power modules. The modules are fully protected against short circuit conditions. Cincon's world class automated manufacturing methods, together with an extensive testing and qualification program; ensure that all CFM40M series converters are extremely reliable.

2. Electrical Block Diagram





CFM40M Series

Application Note V13

3. Main Features and Functions

3.1 Operating Temperature Range

Cincon's CFM40M series converters highly efficient converter design has resulted in its ability to operate ambient temperature environment (-20°C to 70°C). Due consideration must be given to the de-rating curves when ascertaining maximum power that can be drawn from the converter. The maximum power drawn is influenced by a number of factors, such as:

- Input voltage range
- Output load current
- Effective heat sinks

3.2 Output Protection (Over Current Protection)

All different voltage models have a full continuous short-circuit protection. The unit will auto recover once the short circuit is removed. To provide protection in a fault condition, the unit is equipped with internal over-current protection. The unit operates normally once the fault condition is removed. The power module will go to hiccup mode if the output current is set from 130% to 170% of rated current.

4. Applications

4.1 Test Set-Up

The basic test set-up to measure parameters such as efficiency and load regulation is shown in Figure 1. When testing the Cincon's CFM40M series under any transient conditions, please ensure that the transient response of the source is sufficient to power the equipment under test. We can calculate the

- Efficiency
- Load regulation and line regulation

The value of efficiency is defined as:

$$\eta = \frac{V_o \times I_o}{P_{in}} \times 100\%$$

Where:

V_o is output voltage,
 I_o is output current,
 P_{in} is input power

The value of load regulation is defined as:

$$Load\ reg. = \frac{V_{FL} - V_{NL}}{V_{NL}} \times 100\%$$

Where:

V_{FL} is the output voltage at full load
 V_{NL} is the output voltage at 10% load

The value of line regulation is defined as:

$$Line\ reg. = \frac{V_{HL} - V_{LL}}{V_{LL}} \times 100\%$$

Where:

V_{HL} is the output voltage of maximum input voltage at full load
 V_{LL} is the output voltage of minimum input voltage at full load

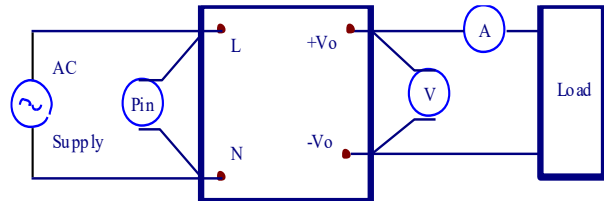


Figure 1. CFM40M Series Test Setup

4.2 Output Ripple and Noise Measurement

The test set-up for noise and ripple measurements is shown in Figure 2. Measured method:

Add a terminal wire is 50mm MIN that the output end needs to connect the sub length of line of one end

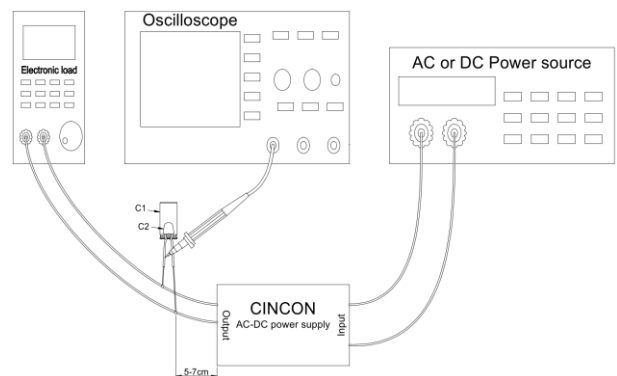


Figure 2. Output Voltage Ripple and Noise Measurement Set up

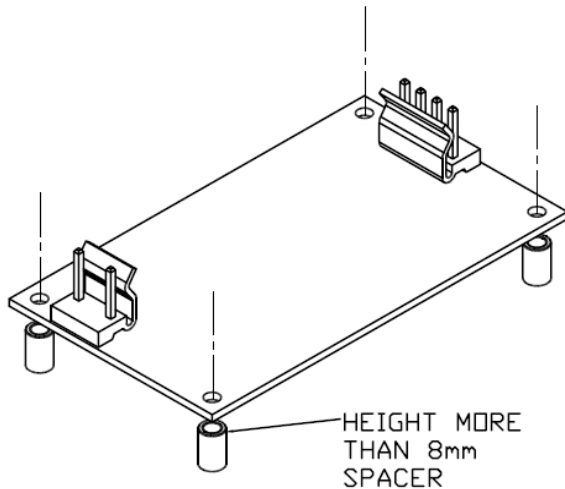


CFM40M Series

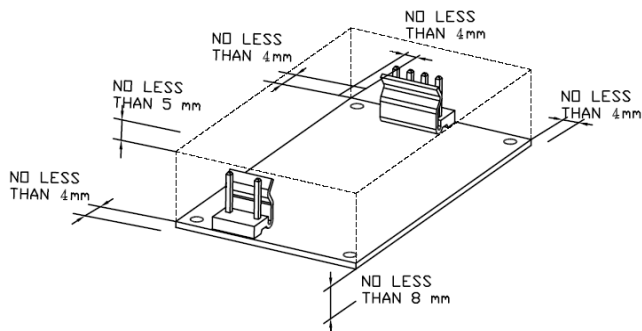
Application Note V13

4.3 Installation Instruction

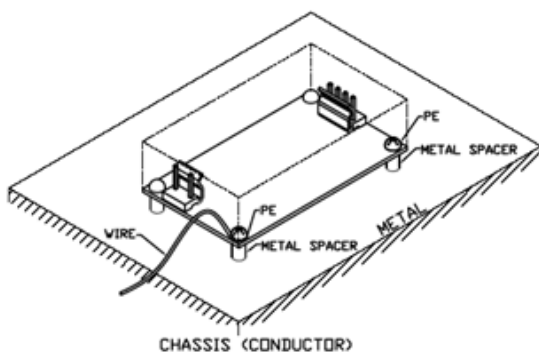
Please use the mounting hold as: CFM40M series: 4 holds of $\varnothing 3.6$ And insert the spacer (Max. $\varnothing 6$) of height over 8mm to lift the unit. The vibration spec. is the value take when the unit is raised by 8mm spacers.



Please reserve 4mm space from the surfaces and the sides of PCB, especially from the solder surface, 8mm space is necessary. If the space is not enough, the specification of insulation and withstand will not be satisfied.



FG should be connected to the earth terminal of the apparatus. If not, the conducted noise and output noise will increase.



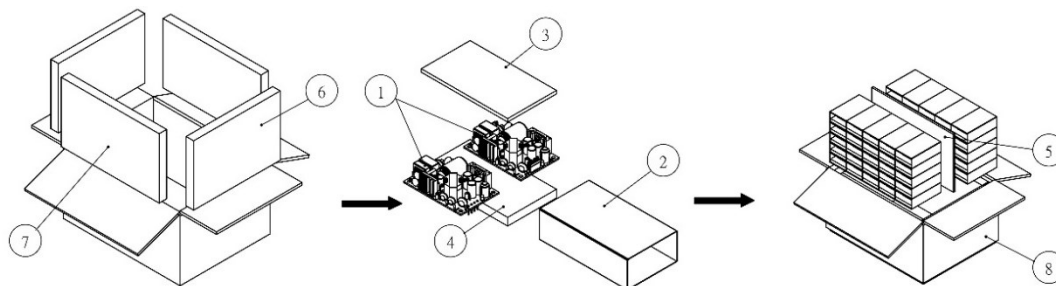


CFM40M Series

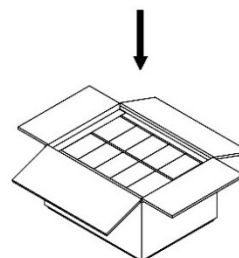
Application Note V13

5. Packing Information

The packing information for CFM40M series is showing as follows:

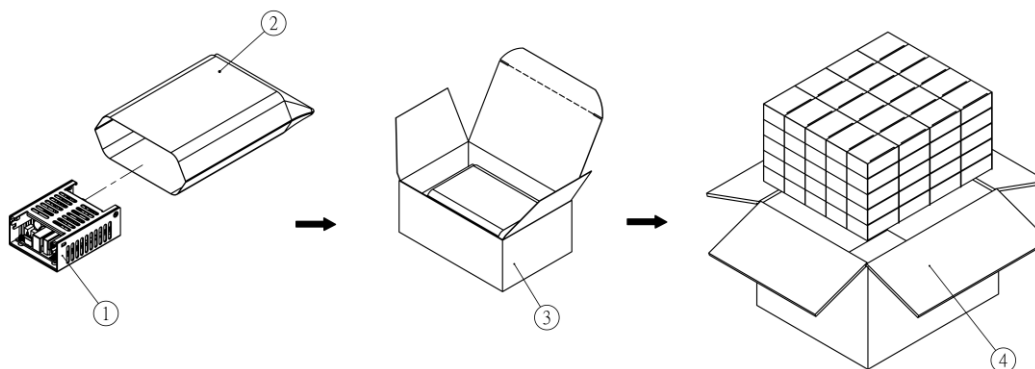


ITEM	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1		CFM40MXXX CFM40MXXX-P	76.2x50.8x23.1 76.2x50.8x25	50
2	G64304165	Inner Box	115x65x35	50
3	G64308313	Antistatic Foam	115x65x5.5	50
4	G64308312	Antistatic Foam	115x65x10	50
5	G64U10075	Partition	326x200x6	1
6	G64301115	Antistatic Foam	288x200x25	2
7	G64301114	Antistatic Foam	326x200x25	2
8	G64114347	No.149 Cardboard Box	388x300x220	1



Each Box Packaging 50 PCS Products
Gross weight Ref. 6 Kg

The packing information for CFM40MXXX-C series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1		CFM40MXXX-C	81.28x62x32	120
2	G64D00972	Plastic Bag	190x135x0.08	120
3	G64316158	Inner Box	100x67x43	120
4	G64102242	No.69 Cardboard Box	421.2x357.5x284.8	1

Each Box Packaging 120 PCS Products
Gross weight Ref. 22.6 Kg

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