



CFM80 Series Application Note V11

AC-DC Switching Power Module CFM80S Series APPLICATION NOTE



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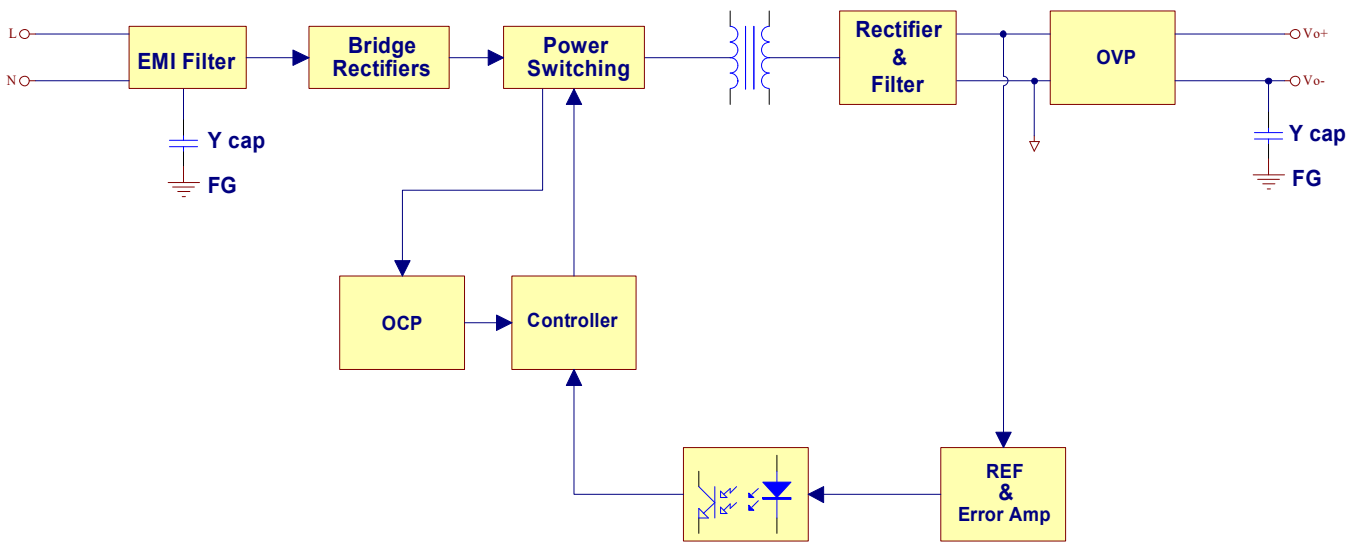
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1. Introduction

This application note describes the features and functions of Cincon's CFM80S series of open frame, switching AC-DC power module. These are highly efficient, reliable and compact, high power density, single output AC/DC power module. The module is fully protected against short circuit and over-voltage conditions. Cincon's world class automated manufacturing methods, together with an extensive testing and qualification program; ensure that the CFM80S series power module is extremely reliable.

2. Electrical Block Diagram





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3. Main Features and Functions

3.1 Operating Temperature Range

Cincon's CFM80S series power modules, which highly efficient design, has resulted in its ability to operate ambient temperature environment (-20°C to 80°C). Due to consideration must be given to the de-rating curves when ascertaining maximum power that can be drawn from the power module. The maximum power drawn is influenced by a number of factors, such as:

- Input voltage range
- Output load current
- These can be effective heat sinks for the power module

3.2 Output Protection (Over Current Protection)

The power modules provide 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 will operate normally once the fault condition is removed. The power module will go to hiccup mode if the output current or voltage is set from 130% to 180% of rated current or voltage.

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 CFM80S 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 current

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 100% 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

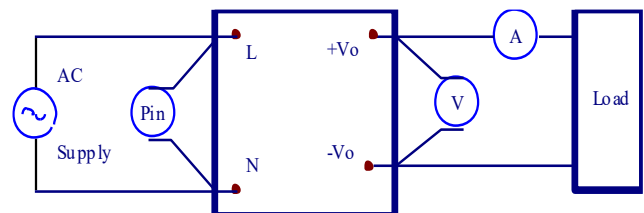


Figure 1. CFM80S Series Test Setup

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 800mm MIN that the output end needs to connect the sub length of line of one end. Add a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to output connect for ripple & noise measuring at 20 MHz Band Width.

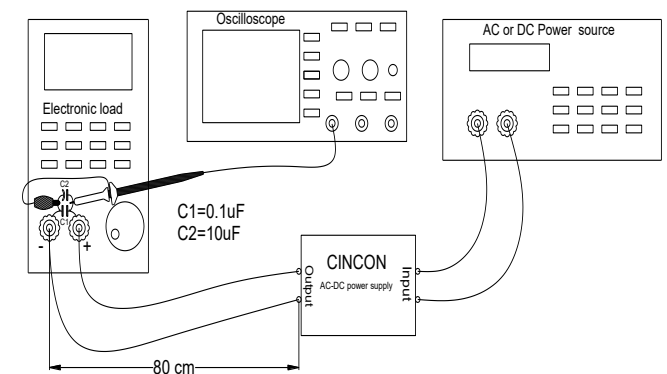


Figure 2. Output Voltage Ripple and Noise Measurement Set-Up



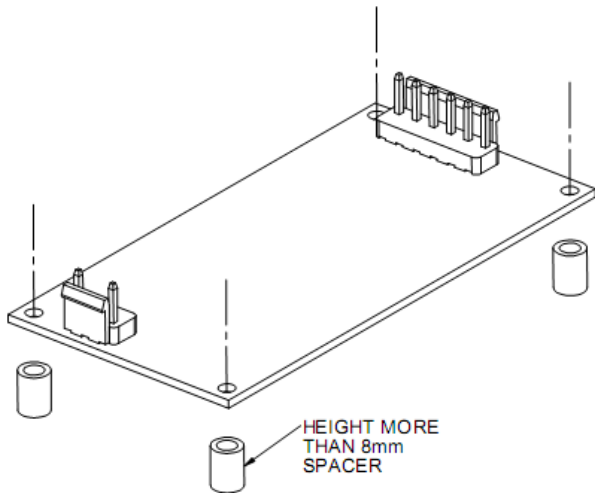
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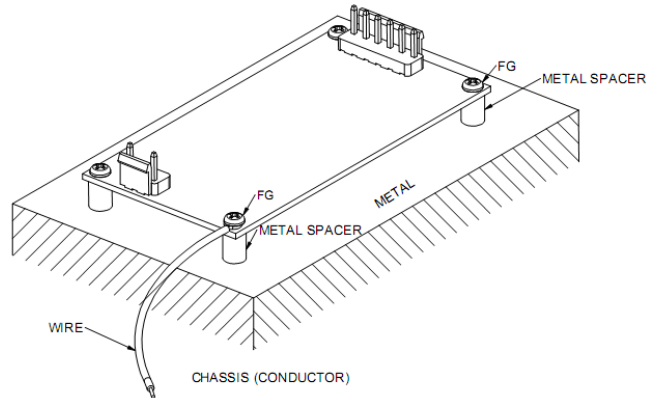
4.3 Installation Instruction

Please use the mounting hold as:
CFM80S series: 4 holds of $\Phi 3.2$

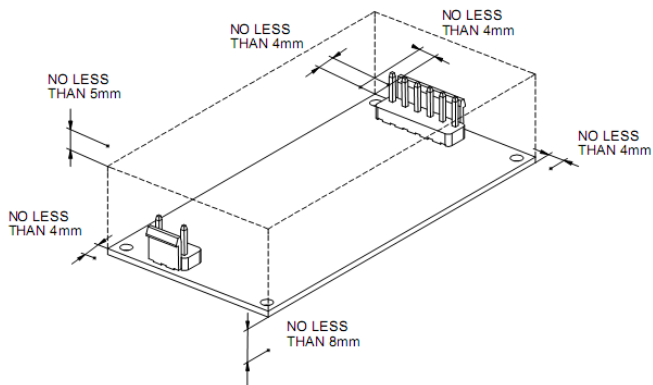
And insert the spacer (Max $\Phi 6$) of height over 8mm to lift the unit. The vibration spec. is the value take when the unit is raised by 8mm spacers.



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



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.



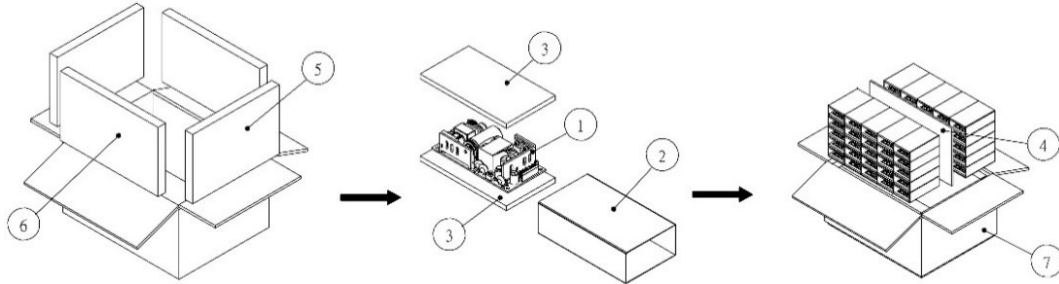


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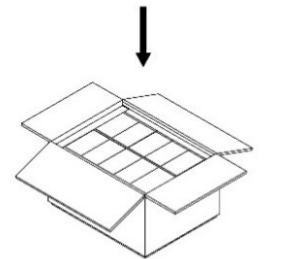
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5. Packing Information

The packing information for CFM80S series is showing as follows:

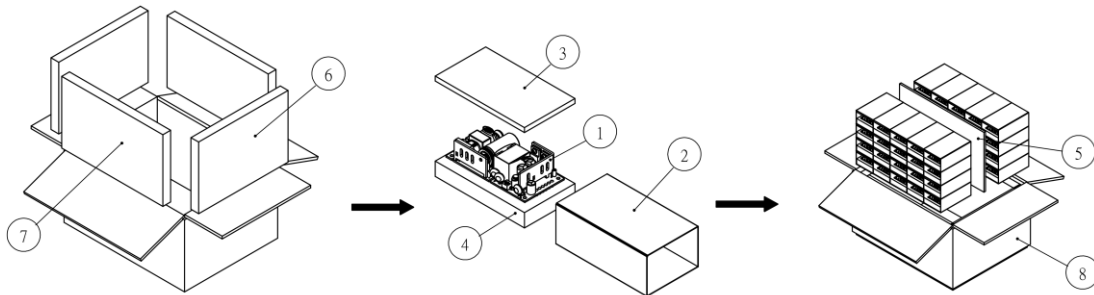


ITEM	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1		CFM80SXXX Product	101.6x50.8x27.1	50
2	G64304165	Inner Box	115x65x35	50
3	G64308313	Antistatic Foam	115x65x5.5	100
4	G64U10075	Partition	326x200x6	1
5	G64301115	Antistatic Foam	288x200x25	2
6	G64301114	Antistatic Foam	326x200x25	2
7	G64114347	No.149 Cardboard Box	388x300x220	1

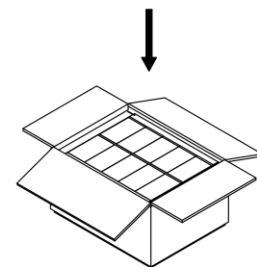


Each Box Packaging 50 PCS Products
Gross weight Ref. 9 Kg

The packing information for CFM80S-P series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1		CFM80SXXX-P Product	101.6x50.8x29	40
2	G64304161	Inner Box	115x65x45	40
3	G64308313	Antistatic Foam	115x65x5.5	40
4	G64308309	Antistatic Foam	115x65x17	40
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 40 PCS Products
Gross weight Ref. 7.5 Kg

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