



CFM81S Series

Application Note V10

AC-DC Switching Power Module

CFM81S Series

APPLICATION NOTE



Approved By:

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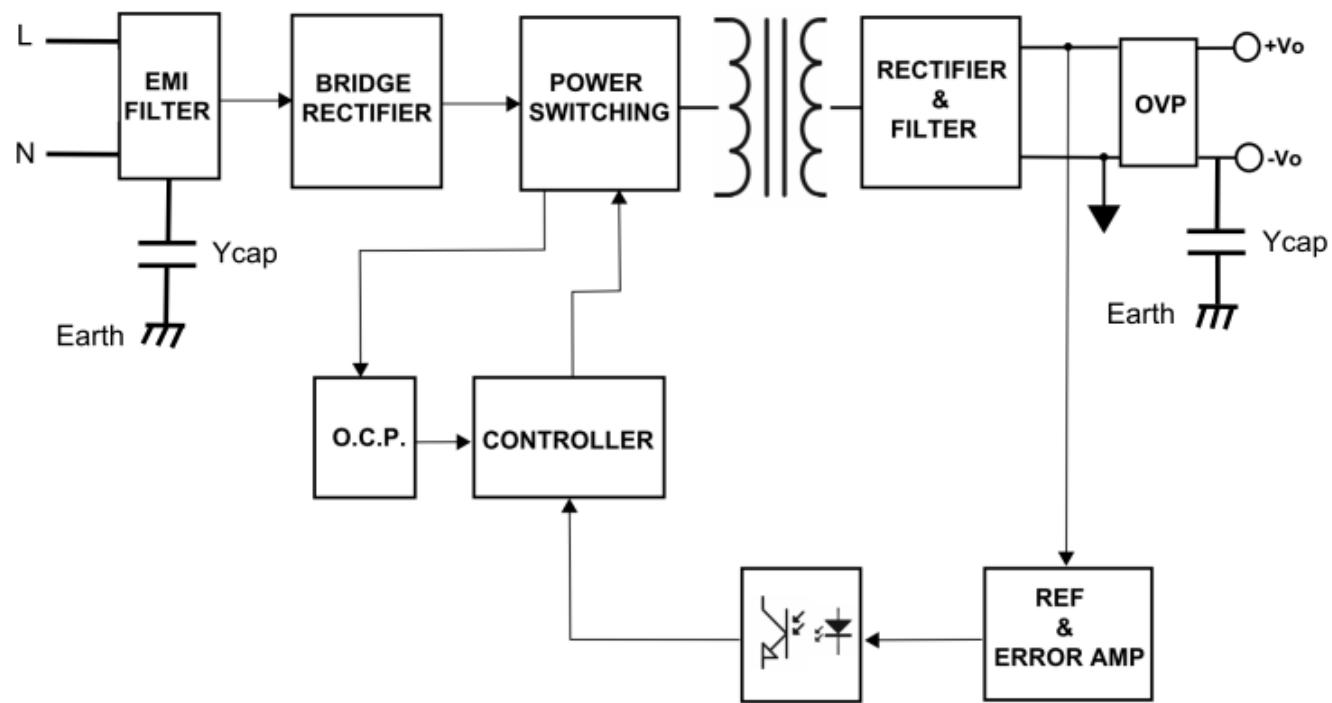
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1. Introduction

This application note describes the features and functions of Cincon's CFM81S series of open frame, switching AC-DC power module. These are highly efficient, reliable, compact, high power density, single output AC/DC power modules. 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 CFM81S series power module is extremely reliable.

2. Electrical Block Diagram





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3. Main Features and Functions

3.1 Operating Temperature Range

The highly efficient design of Cincon's CFM81S series power modules has resulted in their ability to operate within ambient temperature environments from -30°C to 80°C, -40°C can be start up. Due consideration must be given to the de-rating curves when ascertaining the maximum power that can be drawn from the module. The maximum power which can be drawn is influenced by a number of factors, such as:

- Input voltage range
- Permissible output load (per derating curve)

3.2 Output Protection

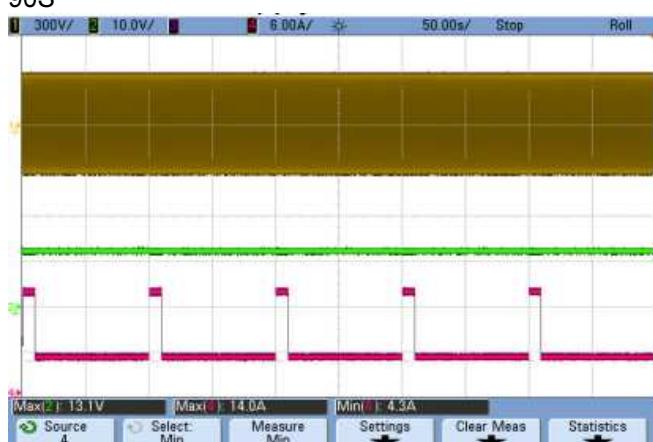
The power modules provide full continuous short-circuit protection. The unit will auto recover once the short circuit is removed. To provide protection in a fault condition, the unit is equipped with internal over-current protection. The unit will operate normally once the fault condition is removed.

3.3 Peak Load Function

CFM81SXXX has a very powerful peak load function which can provide twice the rated power. About OCP(Over Current Protection) of this power modules is set at 200% rated load. The peak load function lasting time < 10 seconds, with a maximum 10% duty cycle. When operating peak load function, it requires the average power do not exceed 75.08% rated power.

Vin=100Vac&115Vac&230Vac&264Vac

Peak load function by 200% load 10S & 61.2% load 90S



CH1:Vin, CH2:Vout, CH4:Iout

Average Power: 60.064W

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 CFM81S 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:

Where:

V_o is output voltage

I_o is output current

P_{in} is input power

The value of load regulation is defined as:

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:

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

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.

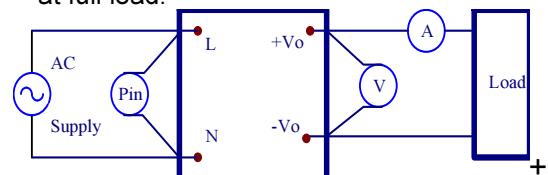


Figure 1. CFM81S Series Test Setup

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 0.1 uF ceramic capacitor and a 10 uF electrolytic capacitor to output at 20 MHz Band Width.

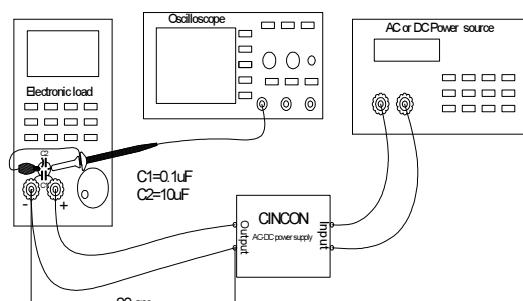


Figure 2. Output Voltage Ripple and Noise Measurement Set-Up



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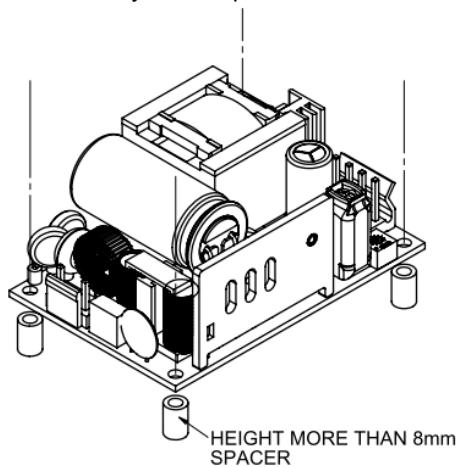
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4.3 Installation Instruction

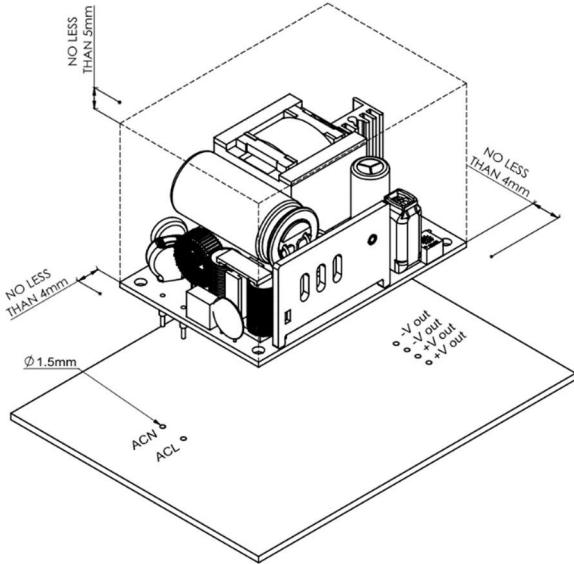
Please use the mounting hold as:

CFM81S series: 4 holds of $\varnothing 3.17$

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.

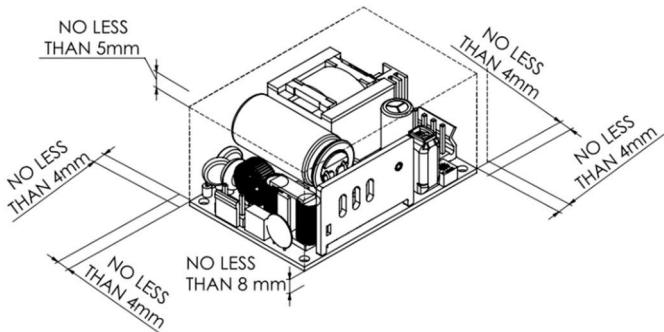


clearance above the highest parts on the PCB.

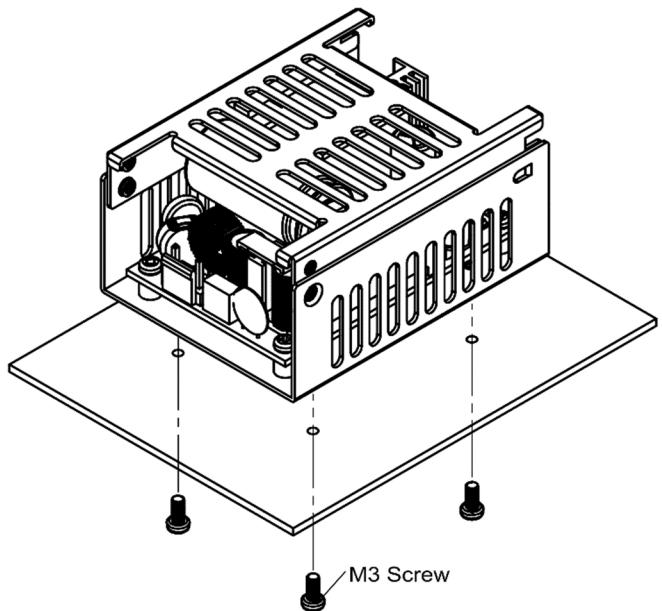


CFM81SXXX-P installation diagram

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.

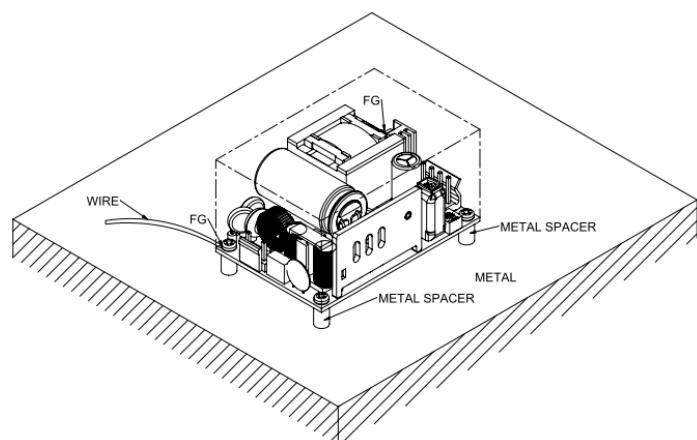


FG should be connected to the earth (ground) terminal of the apparatus. If not, the conducted noise and output noise will increase.



CFM81SXXX-CA installation diagram

Note: M3&M4 screw head and washer diameter shall not exceed 5.5mm



The CFM81SXXX-P mounting holes are 1.5mm. Please allow 4mm side clearance from the components and all side of the PCB. Allow 5mm

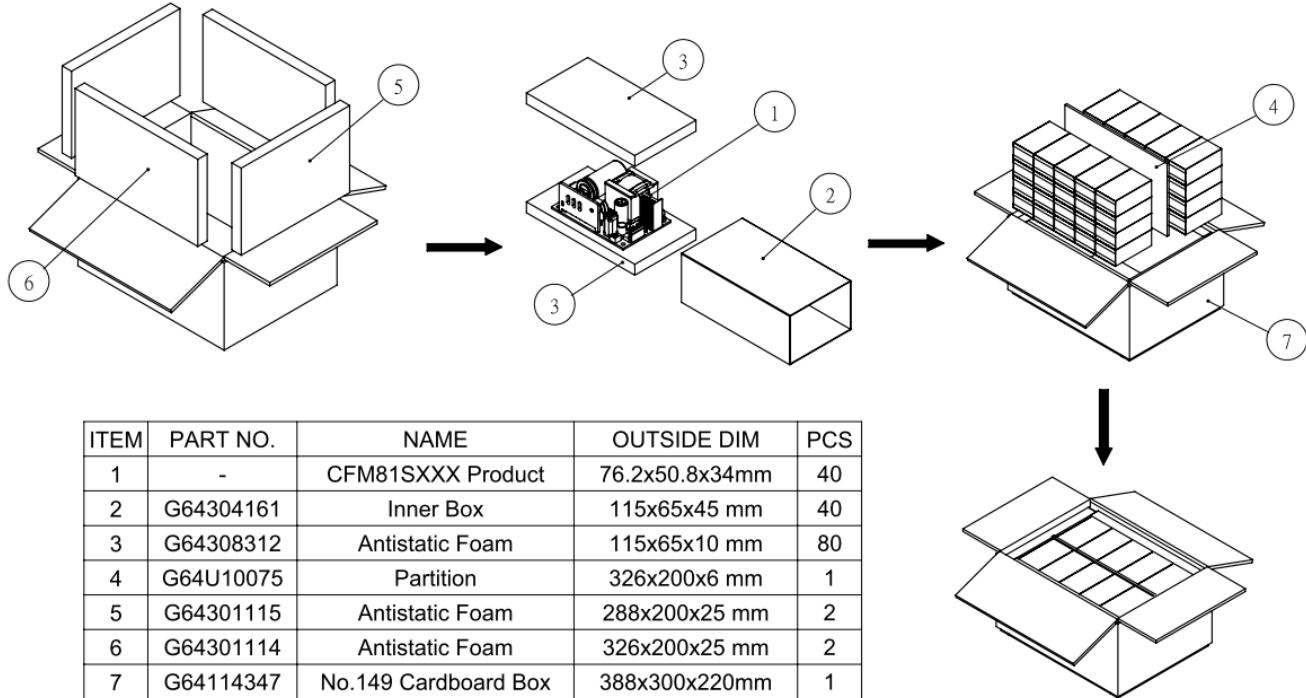


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5. Packing Information

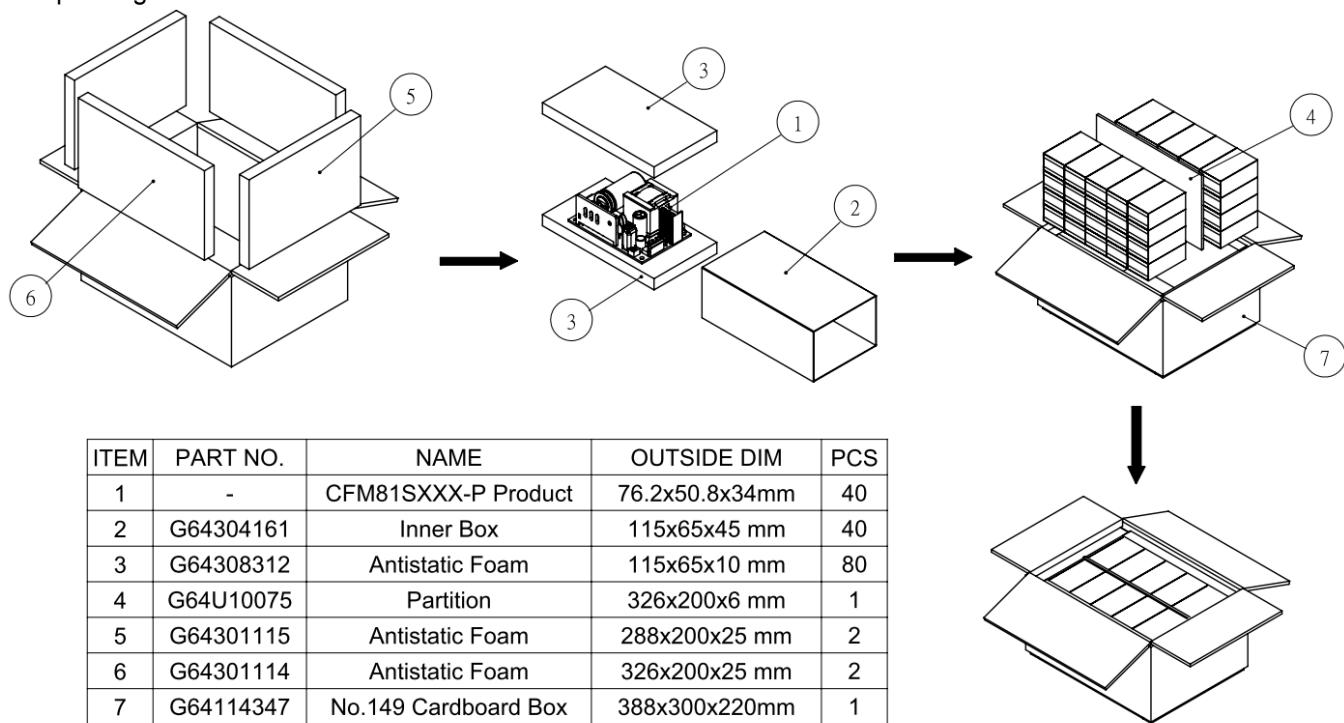
The packing information for CFM81SXXX SERIES:



Each Box Packaging 40 PCS Products
Gross weight Ref. 6.4 Kg

CFM81SXXX 40pcs a box, including the total weight of package material about 6.4Kg

The packing information for CFM81SXXX-P SERIES:



Each Box Packaging 40 PCS Products
Gross weight Ref. 6.4 Kg

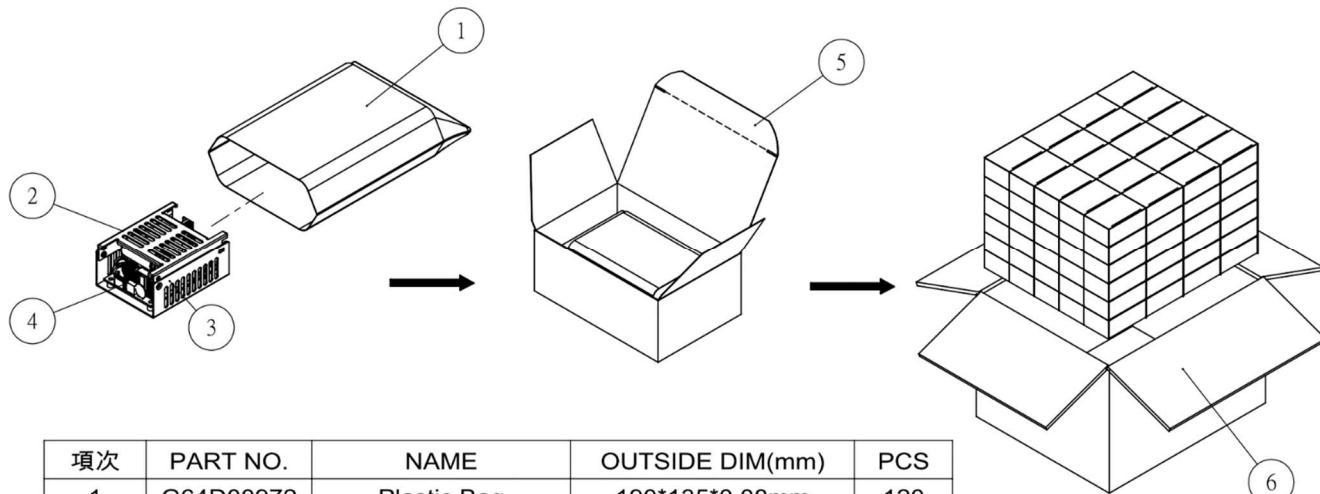
CFM81SXXX-P 40 pcs a box, including the total weight of package material about 6.4Kg



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The packing information for CFM81SXXX-CA SERIES:



項次	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1	G64D00972	Plastic Bag	190*135*0.08mm	120
2	G6612090621	CFM81S Metal Case	81.28*60*16mm T=1mm	120
3	G6612100621	CFM81S Metal Base	81.28*62*32mm T=1mm	120
4	-	CFM81SXXX-CA Product	81.28*62*40mm	120
5	G64316158	Inner Box	100*67*43mm	120
6	G64102242	NO.69 Cardboard Box	421.2*357.5*284.8mm	1

Each Box Packaging 120 PCS Products
Gross weight Ref. 22 Kg

CFM81SXXX-CA 120 pcs a box, including the total weight of package material about 22Kg

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