CFM40C Series

Application Note V11

AC-DC Switching Power Module
CFM40C Series
APPLICATION NOTE

Approved By:

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Content

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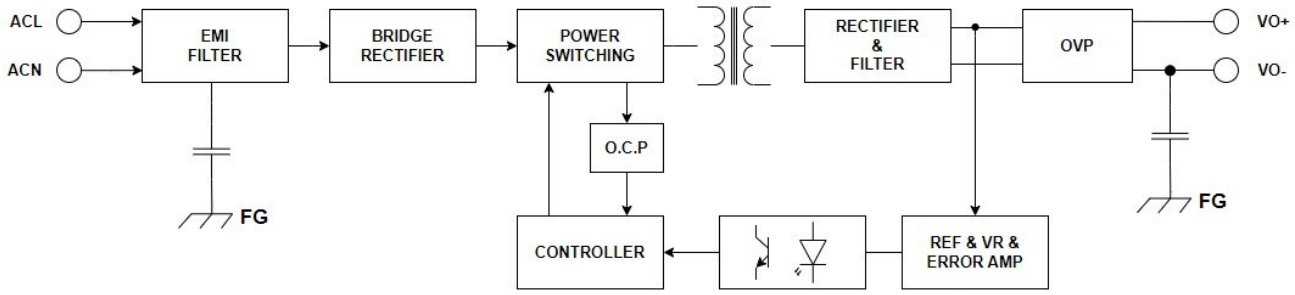
1. Introduction

This application note describes the features and functions of Cincon's CFM40C series of DIN rail, 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 CFM40C series power module is extremely reliable.

2. Electrical Block Diagram



3. Main Features and Functions

3.1 Operating Temperature Range

The highly efficient design of Cincon's CFM40C series power modules has resulted in their ability to operate within ambient temperature environments from 0℃ to 50℃. 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)
- Effective heat sinks

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. The power module will go to hiccup mode if the output current is set from 120% to 180% 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 CFM40C 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:

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

Where:

V_o is output voltage,
I_o is output current,
Pin 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

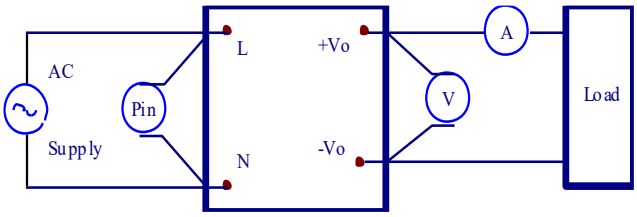


Figure 1. CFM40C Series Test Setup

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 C2: 0.1 uF ceramic capacitor and a C1: 10 uF electrolytic capacitor to output at 20 MHz Band Width.

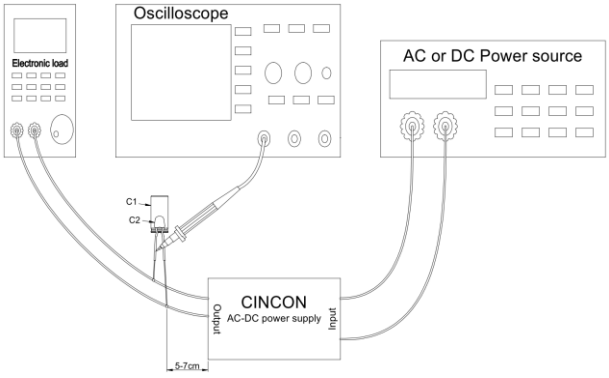
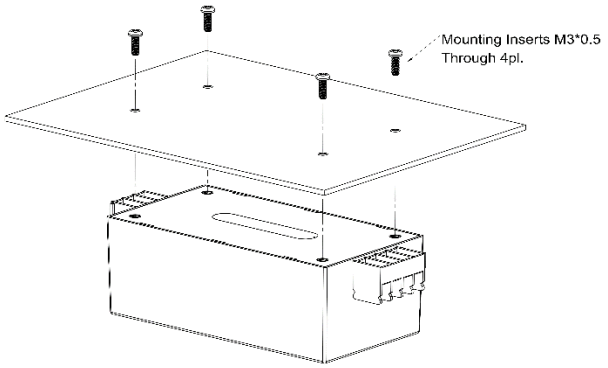
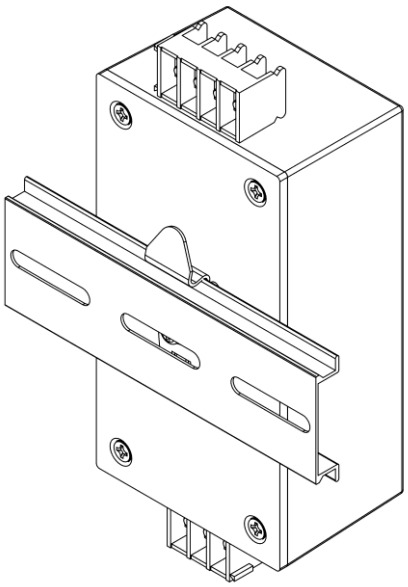


Figure 2. Output Voltage Ripple and Noise Measurement Set-Up

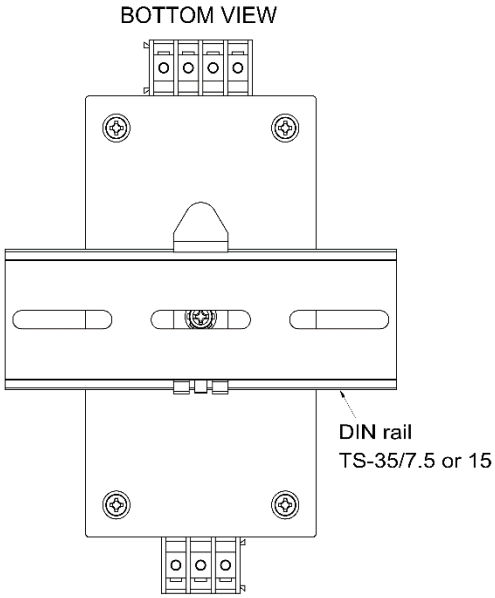
4.3 Installation Instruction

The CFM40C has four screw holes M3 * 0.5, used fixed CFM40C in customer specified place. Please use the mounting holes as follows:



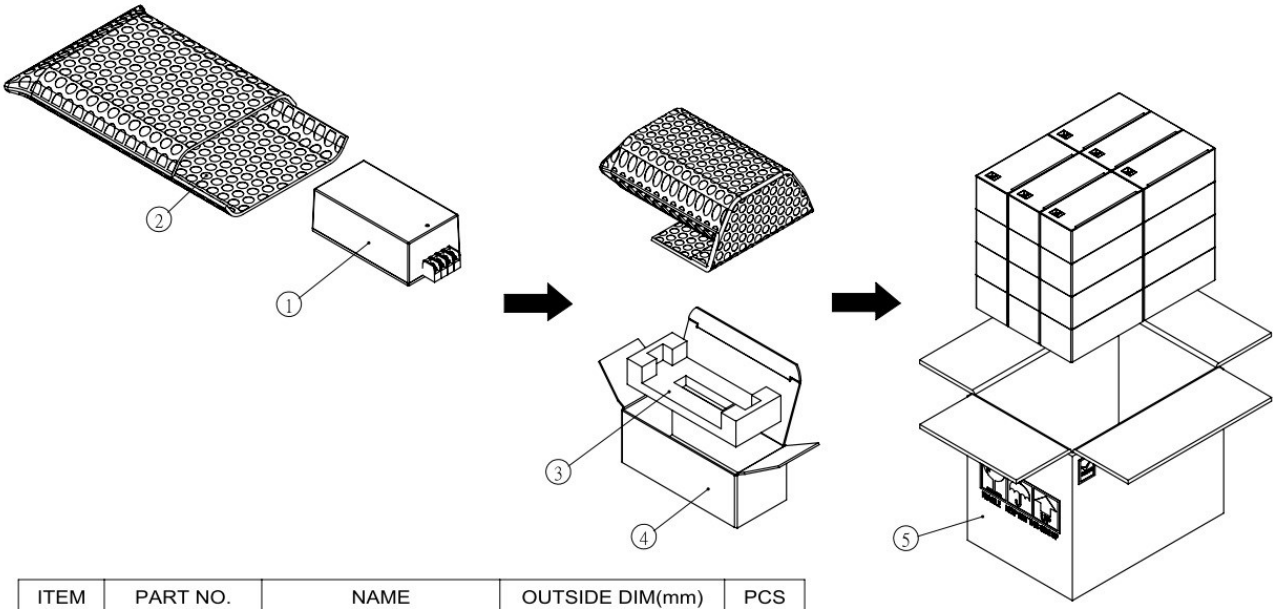


The CFM40CXXX-DR should be fixed vertical forward. In small vibration environment, fixed in this way is most convenient and easy to maintain. Please use the DIN Rail TS-35/7.5 or 15 as follows:



5. Packing Information

The packing information for CFM40CXXX-DR series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM(mm)	PCS
1		CFM40CXXX-DR	138x59x48.1	24
2	G64F00006	Antistatic Bag	185x155x65	24
3	G64301086	Antistatic Foam	155x64x32	24
4	G64205307	Inner Box	164x73x65	24
5	G64100355	No.78 Cardboard Box	345.4x239.4x284.8	1

Each Box Packaging 24 PCS Products
Gross weight Ref. 13.4 Kg

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