60W AC-DC Medical Switch Adapter
TR60M Series
APPLICATION NOTE

Approved By:

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Content

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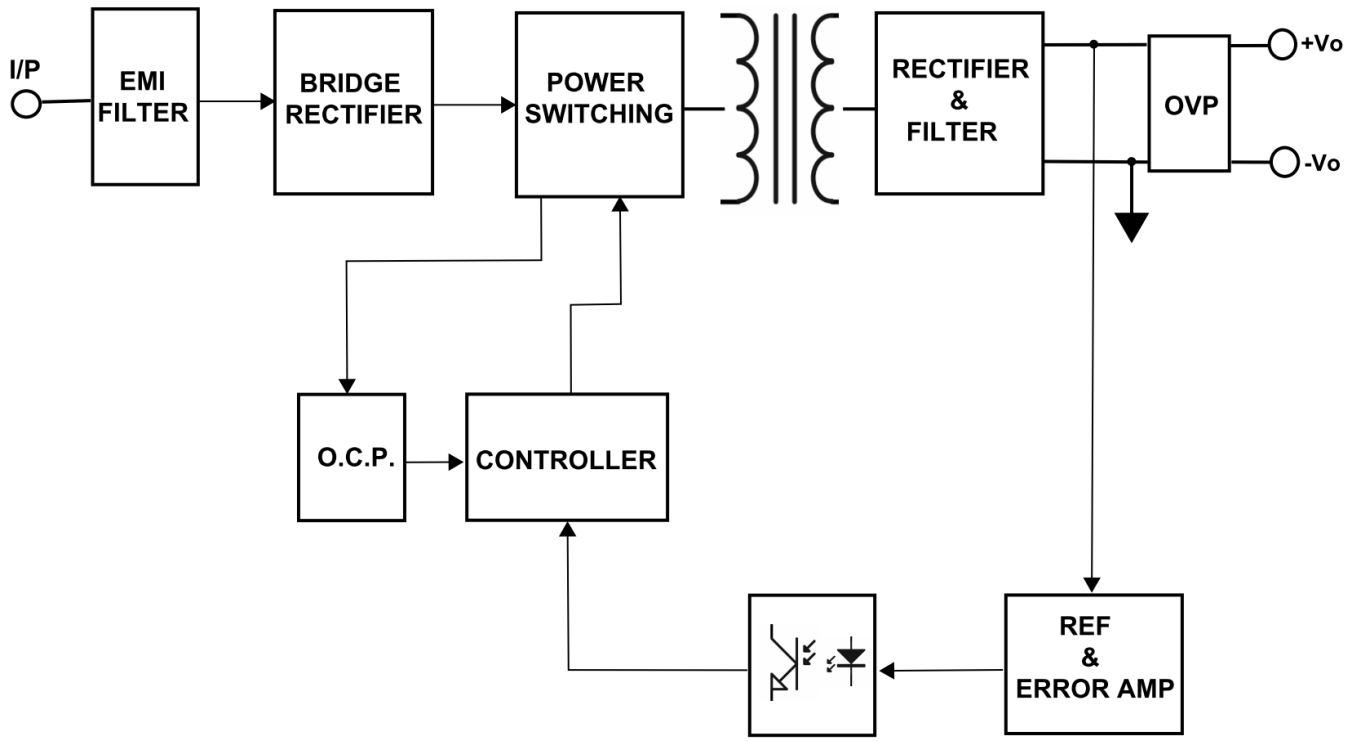
1. Introduction

This application note describes the features and functions of Cincon's TR60M series of AC-DC switch power adapter. These are highly efficient, reliable, compact, high power density, single output AC-DC switch power adapter. The switch power adapter 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 TR60M series switch power adapter is extremely reliable.

2. Electrical Block Diagram



3. Main Features and Functions

3.1 Operating Temperature Range

The highly efficient design of Cincon's TR60M series switch power adapter has resulted in their ability to operate within ambient temperature environments from 0℃ to 60℃(40℃~60℃ with 2.5%/℃ de-rating).

Due consideration must be given to the de-rating curves when ascertaining the maximum power that can be drawn from the switch power adapter. 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 (Over Current Protection)

The switch power adapter 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 switch power adapter will go to hiccup mode if the output current is set from 150% 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 TR60M 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:

$$\eta = \frac{Vo \times Io}{Pin} \times 100\%$$

Where:

Vo is output voltage

Io is output current

Pin is input power

The value of load regulation is defined as:

$$Load\ reg1. = \frac{V_{FL} - V_{NL}}{V_{NL}} \times 100\%$$

Where:

V_{FL} is the output voltage at full load

V_{NL} is the output voltage at 60% load

$$Load\ reg2. = \frac{V_{FL} - V_{NL}}{V_{NL}} \times 100\%$$

Where:

V_{FL} is the output voltage at 60% load

V_{NL} is the output voltage at 20% 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.

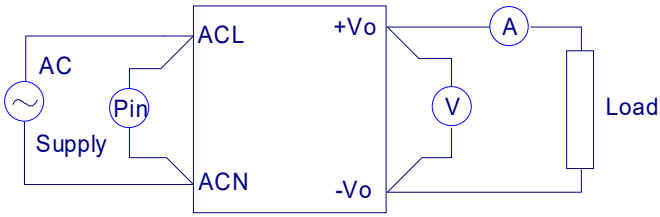


Figure 1. TR60M Series Test Setup

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

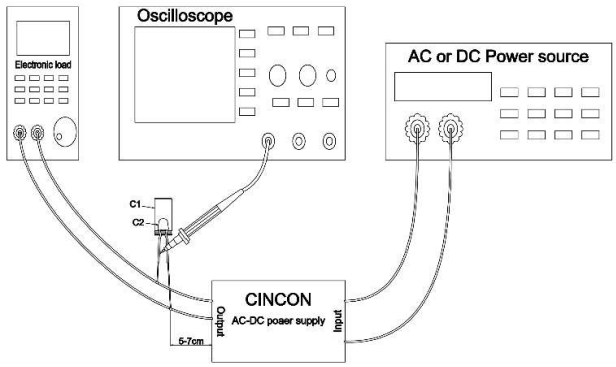
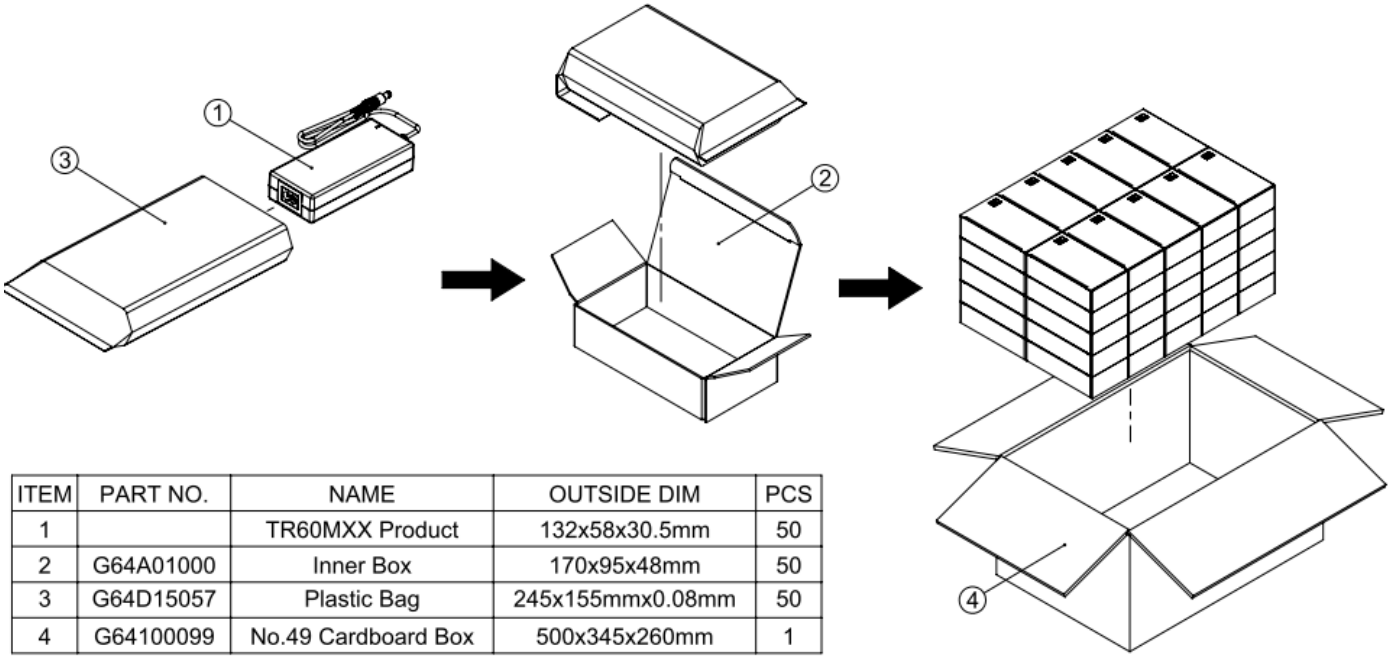


Figure 2. Output Voltage Ripple and Noise Measurement Set up

5. Packing Information

The packing information for TR60MXX series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM	PCS
1		TR60MXX Product	132x58x30.5mm	50
2	G64A01000	Inner Box	170x95x48mm	50
3	G64D15057	Plastic Bag	245x155mmx0.08mm	50
4	G64100099	No.49 Cardboard Box	500x345x260mm	1

Each Box Packaging 50 PCS Products
Gross weight Ref. 18.5 Kg

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