



TRH160A Series

Application Note V13

160W AC-DC Switching Adapter TRH160A Series APPLICATION NOTE



Approved By:

Department	Approved By	Checked By	Written By
Research and Development Department	Ovid	Calvin/Kaimi	Joyce
Design Quality Department	Benny	JoJo	



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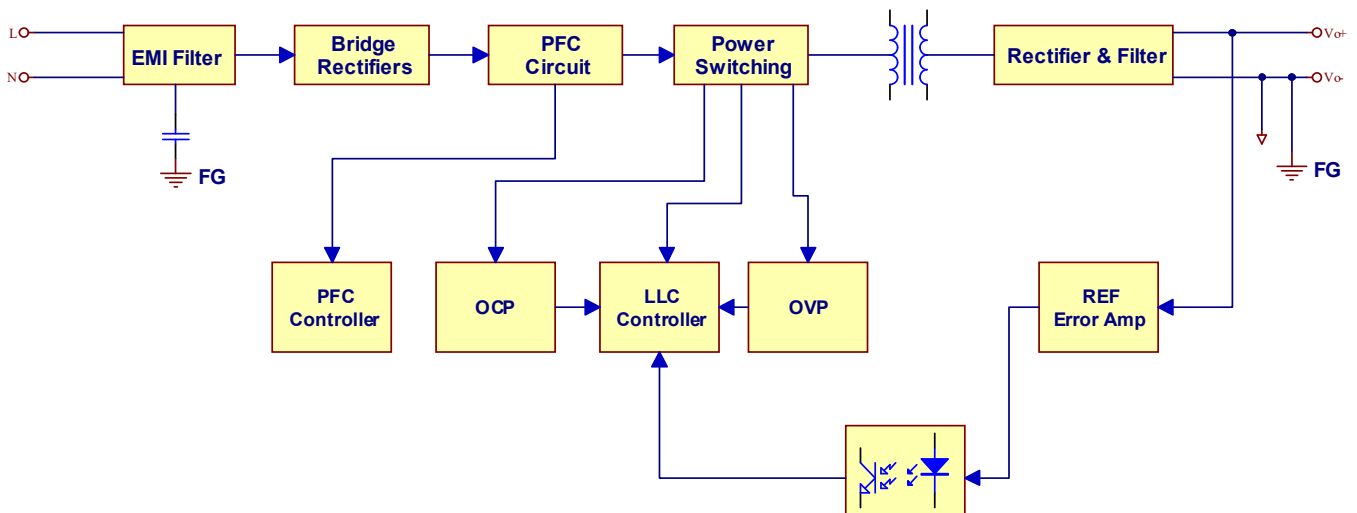
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1. Introduction

This application note describes the features and functions of Cincon's TRH160A series of adapter, switching AC-DC power. These are highly efficient, reliable, compact, high power density, single output AC/DC power. The power 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 TRH160A series power is extremely reliable.

All models are suitable for computer equipment, telecommunications, 5G communication system. Industrial applications and household equipments.

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 TRH160A series power has resulted in their ability to operate within ambient temperature environments from -20°C to 40°C, -30°C can be start-up at full load. Due consideration must be given to the de-rating curves when ascertaining the maximum power that can be drawn from the power. 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)

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 supply up to 110%~130% of rated current. In the event of an over current converter will go into a hiccup mode protection.

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 TRH160A 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:

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

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

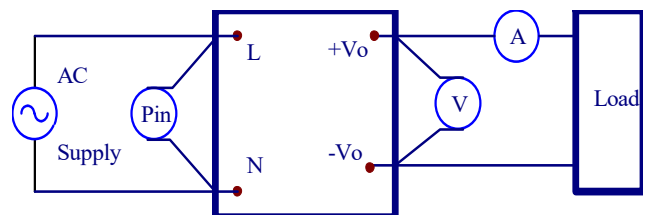


Figure 1. TRH160A Series Test Setup

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.

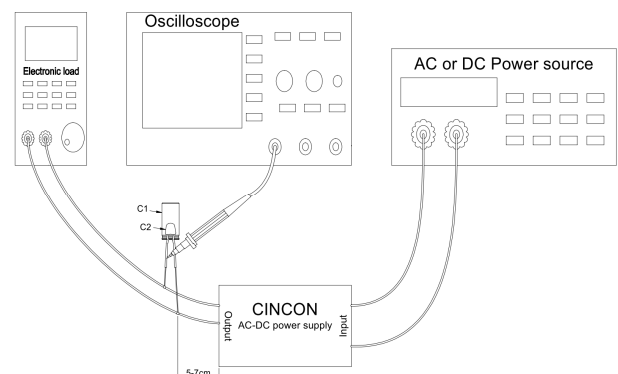


Figure 2. Output Voltage Ripple and Noise Measurement Set-Up

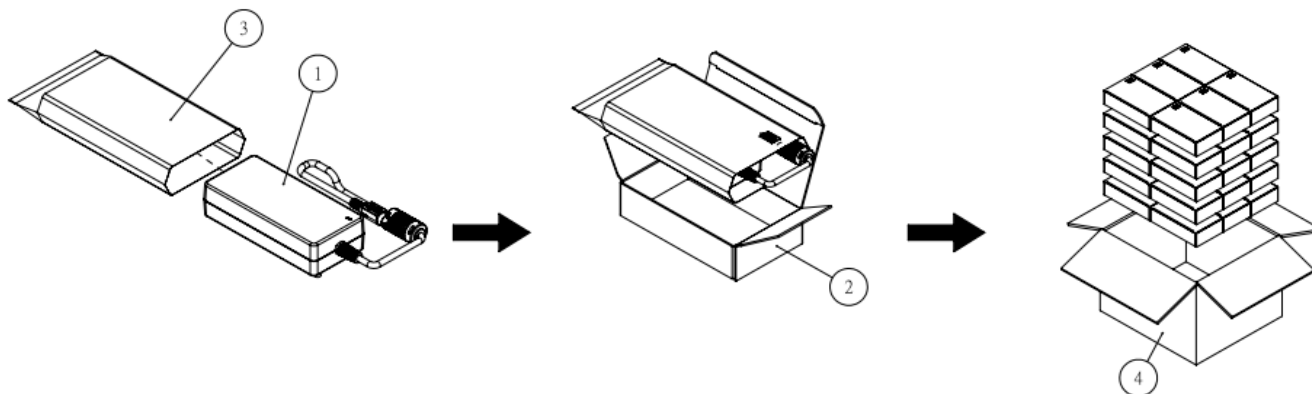


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5. Packing Information

The packing information for TRH160A series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM	PCS
1		TR160XXX Product	150x70x39mm	30
2	G64205321	Inner Box	185x110x50mm	30
3	G64D15057	Plasitc Bag	155x245x0.08mm	30
4	G64114345	NO.163 Cardboard Box	385x345x280mm	1

Each Box Packaging 30 PCS Products
 Net weight Ref. 17.1 Kg
 Gross weight Ref. 18.5 Kg

Headquarters:

14F, No.306, Sec.4, Hsin Yi Rd.
 Taipei, Taiwan
 Tel: 886-2-27086210
 Fax: 886-2-27029852
 E-mail: sales@cincon.com
 Web Site: <https://www.cincon.com>

CINCON ELECTRONICS CO., LTD.

Factory:

No. 8-1, Fu Kung Rd.
 Fu Hsing Industrial Park
 Fu Hsing Hsiang,
 Chang Hua Hsien, Taiwan
 Tel: 886-4-7690261
 Fax: 886-4-7698031

Cincon North America:

1655 Mesa Verde Ave. Ste 180
 Ventura, CA 93003
 Tel: 805-639-3350
 Fax: 805-639-4101
 E-mail: info@cincon.com