



# TRH50 VI Series Application Note V13

## 50W AC-DC I.T.E. Switch Adapter TRH50 VI Series APPLICATION NOTE



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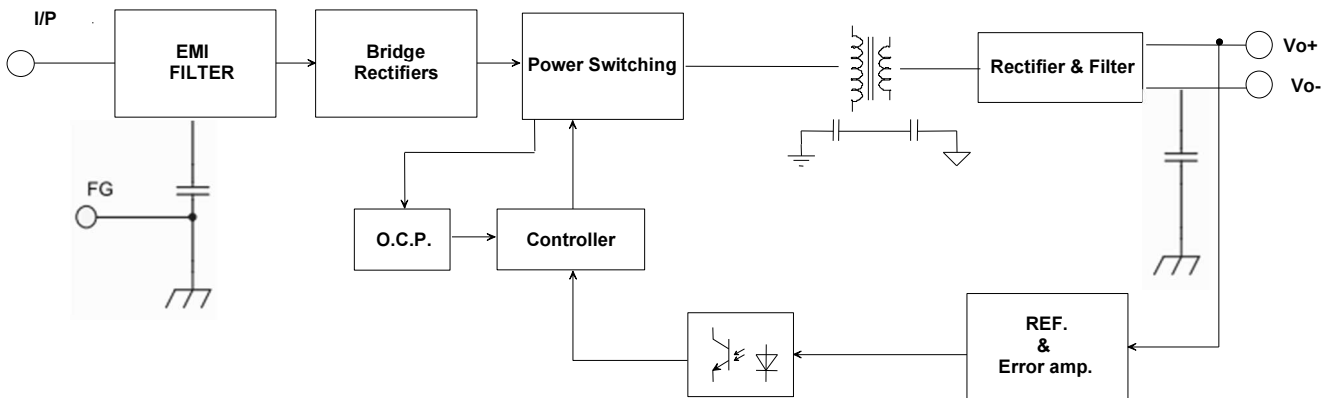
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### 1. Introduction

This application note describes the features and functions of Cincon's TRH50 VI series of AC-DC switch power adapters. These are highly efficient, reliable, compact, high power density, single output AC/DC switch power adapters. 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 TRH50 VI series switch power adapters 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 TRH50 VI series switch power adapters has resulted in their ability to operate within ambient temperature environments from -20°C to 70°C (40°C~70°C with 2.5%/°C 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 adapters 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 175% to 190% 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 TRH50 VI 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:

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

Where:

$V_{FL}$  is the output voltage at full load

$V_{NL}$  is the output voltage at 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.

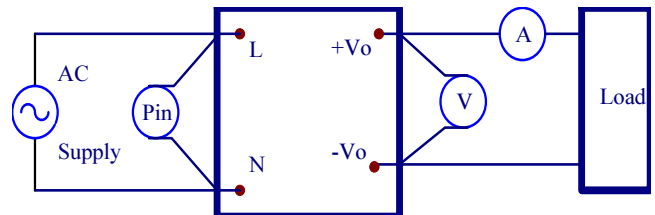


Figure 1. TRH50 VI Series Test Setup

#### 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  $C_2=0.1\mu F$  ceramic capacitor and a  $C_1=10\mu F$  electrolytic capacitor to output at 20 MHz Band Width.

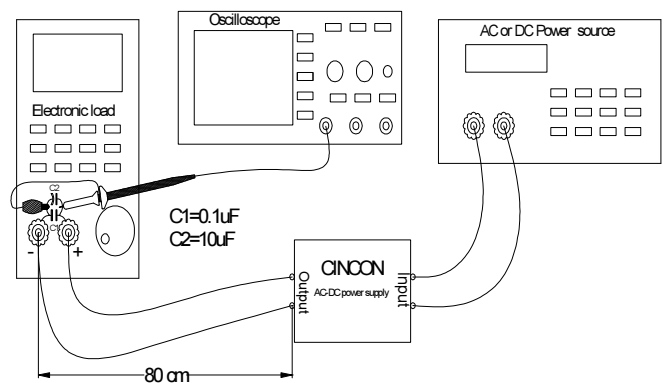


Figure 2. Output Voltage Ripple and Noise Measurement Set up

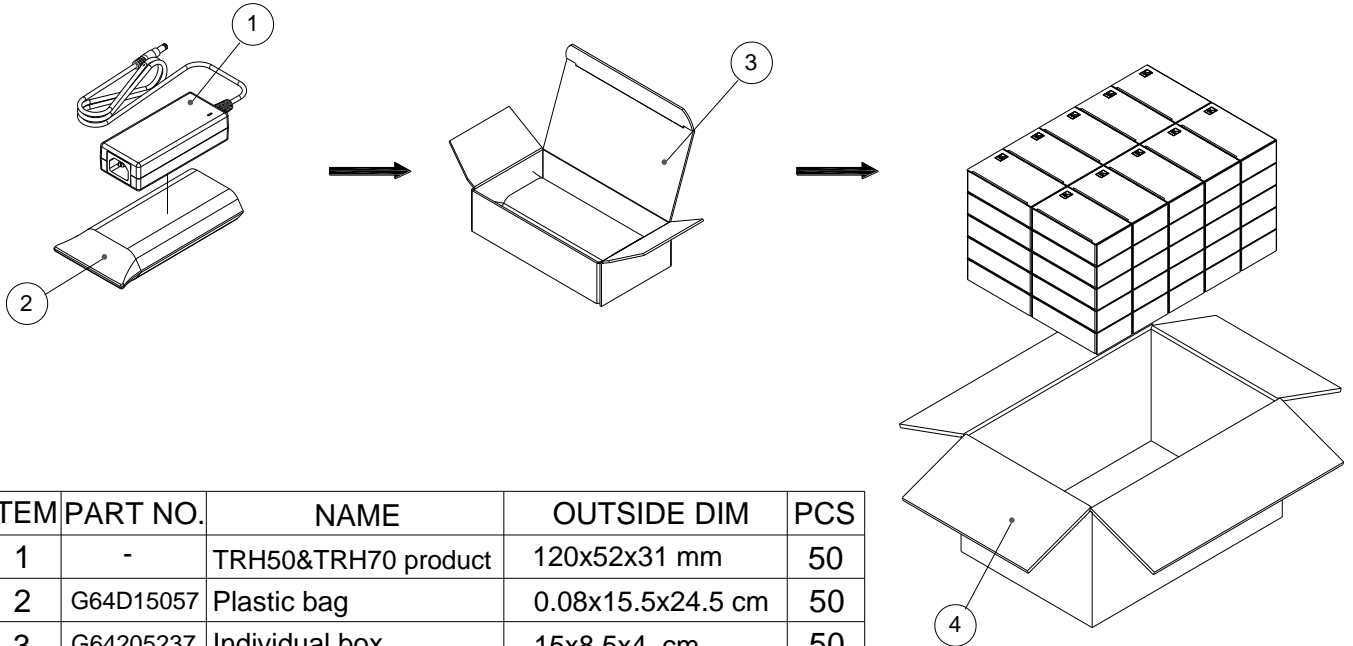


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### 5. Packing Information

The packing information for TRH50 series is showing as follows:



ITEM	PART NO.	NAME	OUTSIDE DIM	PCS
1	-	TRH50&TRH70 product	120x52x31 mm	50
2	G64D15057	Plastic bag	0.08x15.5x24.5 cm	50
3	G64205237	Individual box	15x8.5x4 cm	50
4	G64112340	Carton box	455x318x230 mm	1

Each Box Packaging 50 PCS Products  
 Net weight 15 Kg  
 Gross weight 16 Kg

#### Headquarters:

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