



# TR60M SERIES

## 60W MEDICAL SWITCHING ADAPTER



### Features

- \* Universal Input Range 90~264Vac
- \* Meets EN60601-1 and EN55011 Class B
- \* Continuous Short Circuit Protection
- \* Over Voltage Protection
- \* Meets 2 MOPP
- \* Meet CEC Level IV  
(Output Cable Length  $\leq$  1800mm)  
(TR60M Series meets CEC IV except TR60M05 is Non-CEC Compliant)  
(TR60M12: Output Cable Length  $\leq$  1220mm 16AWG)
- \* Efficiency & Standby Power Meet Level V (Option)  
(Output Cable Length  $\leq$  1800mm)  
(TR60M12 : Output Cable Length  $\leq$  720mm 16AWG)  
(TR60M15 : Output Cable Length  $\leq$  1220mm 16AWG)  
(TR60M18, TR60M19 : Output Cable Length  $\leq$  1500mm 18AWG)



### Ordering information

<b>TR60MXX-</b>	<b>XX</b>	<b>X</b>	<b>XX</b>
Model No.	DC Plug Type	OVP E: With OVP	DC Cable Length and Type 01: 720mm 02: 1220mm 03: 1800mm 11: 720mm with Ferrite Core 12: 1220mm with Ferrite Core 13: 1800mm with Ferrite Core *18AWG/UL1185

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE 2	VOLTAGE ACCURACY NOTE 1	LINE REGULATION NOTE 3	LOAD REGULATION NOTE 4	% EFF. (Typ) NOTE 5
TR60M05	5 V	6 A	50 mV	$\pm 4\%$	$\pm 1\%$	$\pm 6\%$	75%
TR60M12	12 V	5 A	120 mV	$\pm 2\%$	$\pm 1\%$	$\pm 5\%$	85%
TR60M15	15 V	4 A	150 mV	$\pm 2\%$	$\pm 1\%$	$\pm 3\%$	85%
TR60M18	18 V	3.33 A	180 mV	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	86%
TR60M19	19 V	3.15 A	190 mV	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	86%
TR60M24	24 V	2.5 A	240 mV	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	87%
TR60M36	36 V	1.66 A	360 mV	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	87%
TR60M48	48 V	1.25 A	480 mV	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	87%

## Specifications

### INPUT SPECIFICATIONS:

Voltage .....	90~264Vac
	120~370Vdc
Frequency .....	47 to 63Hz
Inrush Current .....	Cold Start @25°C 80A max. @240Vac
Conducted EMI .....	CISPR/FCC Class B
Leakage Current .....	100uA max.

### OUTPUT SPECIFICATIONS:

Hold-up Time .....	8ms typ. @115Vac
Short Circuit Protection .....	Continuous
Over Voltage Protection .....	Yes
Temperature Coefficient .....	±0.05%/°C

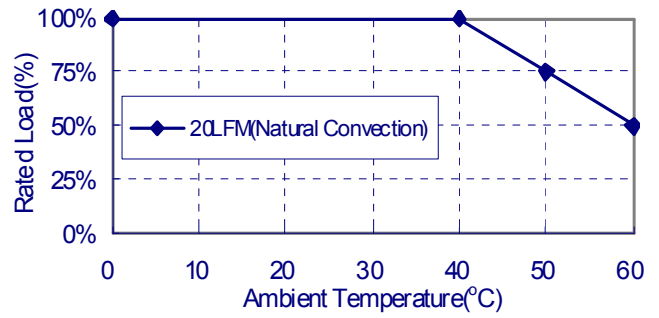
### GENERAL SPECIFICATIONS:

Isolation .....	Input to output =4000VAC
Operating Temperature .....	0 ~ 60°C (see derating curve)
Storage Temperature .....	-20 ~ 85°C
Humidity .....	93% RH max. Non condensing
Cooling .....	Natural Convection
Switching Frequency .....	100KHz Typical
MTBF .....	MIL-HDBK-217F, GB, at 25°C/115VAC ..... 200Khrs min.
Altitude .....	3000m
Dimensions .....	5.197x2.283x1.201 inches (132.00x58.00x30.50mm)
Weight .....	345g(0.76 Pounds)

### SAFETY AND EMC:

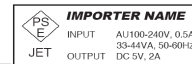
Emission and Immunity (Ed. 4.0) .....	N55011, EN60601-1-2, EN61000-3-2
	EN61000-3-3
Safety (Ed. 3.1) ... Class II, IEC60601-1:2005+A1:2012, EN60601-1:2006/A1:2013	UL ANSI/AAMI ES60601-1:2005

## TR60M Series Derating Curve



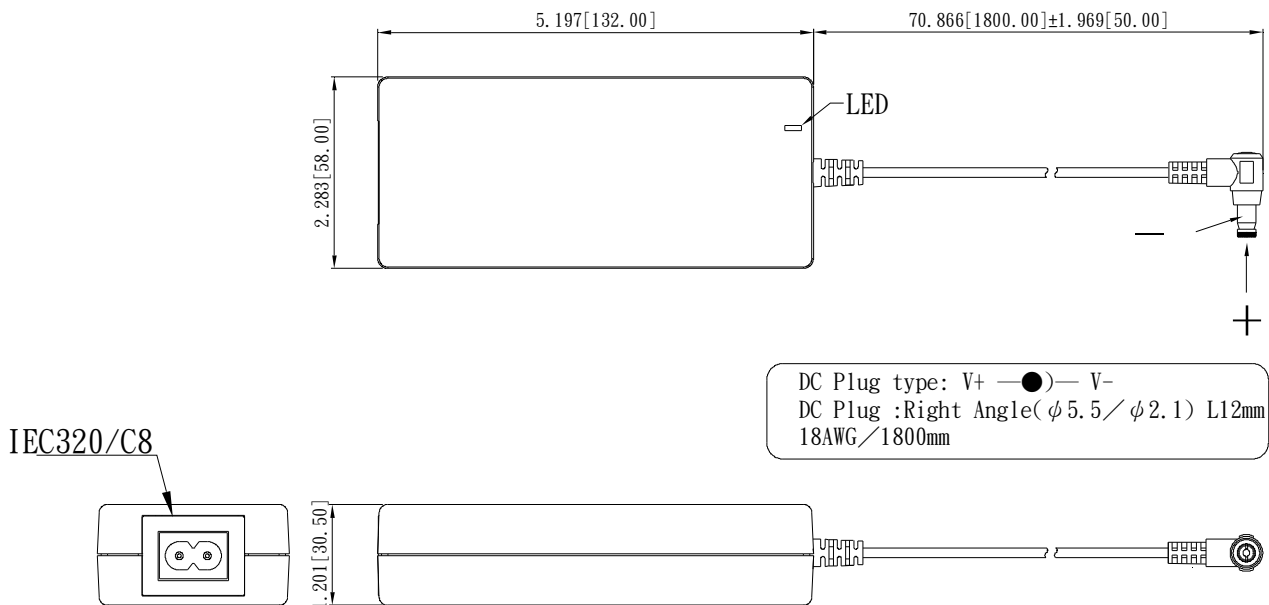
### NOTE:

- Voltage accuracy at 60% full load.
- Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple&noise measurement @20MHz BW.
- Line regulation is measured from 100Vac to 240Vac full load.
- Load regulation is measured from 60% to 100% full load and from 60% to 20% full load (60% +/- 40% full load).
- Typical efficiency at 230VAC and full load at 25°C.
- "Various TR Series adapters are PSE certified. PSE certification alone is not sufficient for importation into Japan. A valid PSE mark must contain the name of the importer as shown in the example below. If PSE mark is required, the name of the registered importer must be supplied to Cincon on order placement. Product labels will not contain PSE mark if importer name is not supplied. Consult factory or local representative for details".



## Mechanical Specification

All Dimensions are in inches(mm)  
 Tolerance: Inches: X.XXX±0.02  
 Millimeters: X.XX±0.5



Typical at 25°C, nominal line and 75% load, unless otherwise Specified