



# TR70M SERIES

## 70W MEDICAL SWITCHING ADAPTER



### Features

- \* Universal Input Range 80~264VAC
- \* Meets EN55011 Class B and CISPR/FCC Class B
- \* Continuous Short Circuit Protection
- \* Over Voltage Protection
- \* No Load Power Consumption <150mW
- \* Meets CoC Tier 2 & DoE Level VI
- \* Meets IEC/EN60335-1
- \* Meets 2 MOPP
- \* Class I (TR70MA) & Class II (TR70MB)
- \* Altitude 5000m

(TR70MA120&TR70MB120: Output Cable Length  $\leq$  1220mm 16AWG) (note7)

(TR70MA150&TR70MB150: Output Cable Length  $\leq$  1220mm 16AWG)

(TR70MA180&TR70MB180: Output Cable Length  $\leq$  1800mm 16AWG)

(Output Cable Length  $\leq$  1800mm 18AWG)



### Ordering information

TR70MXXXX	XX	X	XX
Model No.	DC Plug Type	OVP	DC Cable Length and Type
X: A or B		E: With OV	01: 720mm
A: CLASS I			02: 1220mm
B: CLASS II			03: 1800mm
			11: 720mm with Ferrite Core
			12: 1220mm with Ferrite Core
			13: 1800mm with Ferrite Core
			*18AWG/UL1185
			*16AWG/UL1185 for 12V

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE 2	VOLTAGE SETPOINT NOTE 1	LINE REGULATION NOTE 3	LOAD REGULATION NOTE 4	EFFICIENCY (Typ.) NOTE 5
TR70MA120	12V	5.8A	120mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 5\%$	89%
TR70MA150	15V	4.65A	150mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 3\%$	89%
TR70MA180	18V	3.9A	180mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	89%
TR70MA240	24V	3.0A	240mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	90%
TR70MA360	36V	1.9A	360mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	90%
TR70MA480	48V	1.5A	480mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	91%
TR70MB120	12V	5.8A	120mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 5\%$	89%
TR70MB150	15V	4.65A	150mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 3\%$	89%
TR70MB180	18V	3.9A	180mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	89%
TR70MB240	24V	3.0A	240mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	90%
TR70MB360	36V	1.9A	360mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	90%
TR70MB480	48V	1.5A	480mVp-p	$\pm 2\%$	$\pm 1\%$	$\pm 2\%$	91%

## Specifications

### INPUT SPECIFICATIONS:

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

### OUTPUT SPECIFICATIONS:

Hold-up Time ..... 10ms typ. @115Vac  
 Short Circuit Protection.....Hiccup Mode (Auto Recovery)  
 Over Voltage Protection ..... IC Component to Clamp (Auto Recovery)  
 Temperature Coefficient ..... ±0.05%/°C max.

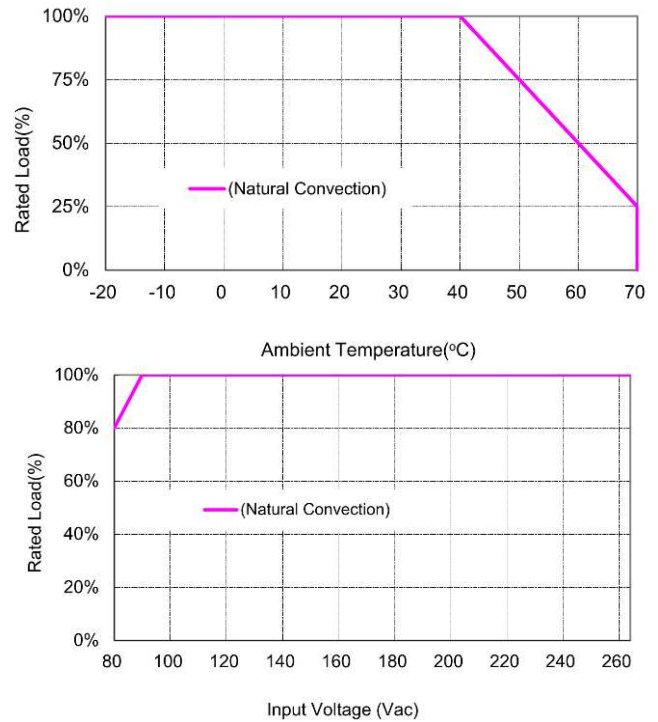
### GENERAL SPECIFICATIONS:

Isolation ..... Input to output = 4,400VAC  
 Operating Temperature ..... -20 ~ 70°C (See Derating Curve, note6)  
 Storage Temperature ..... -40~85°C  
 Humidity ..... 93% RH max. Non condensing  
 Cooling..... Natural Convection  
 Switching Frequency ..... 65KHz Typical  
 MTBF ..... MIL-HDBK-217F, GB, at 25°C/115VAC ..... 500Khrs min.  
 Altitude ..... 5000m  
 AC Inlet ..... IEC320/C14(TR70MA) / IEC320/C8(TR70MB)  
 Dimensions ..... 4.724x2.047x1.220 inches (120.00x52.00x31.00 mm)  
 Weight ..... 300g(0.66 Pounds)

### SAFETY AND EMC:

Emissions and Immunity (Ed 4.0) ..... EN55011 Class B, EN61000-3-2,3  
 EN60601-1-2, IEC 61000-4-2, 3, 4, 5, 6, 8, 11  
 Safety Approved ( Ed.3.1) ..... ClassII, IEC60601-1, EN 60601-1  
 UL ANSI/AAMI ES60601-1

## TR70M Series Derating Curve



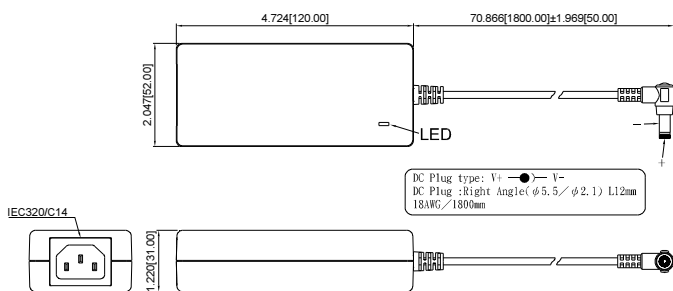
### NOTE:

1. Voltage accuracy at 60% full load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measurement @20MHz BW.
3. Line regulation is measured from 100Vac to 240Vac, full load.
4. Load regulation is measured from 60% to 100% full load and from 60% to 20% full load (60% +/- 40% full load).
5. Typical efficiency at 230VAC and 75% load at 25°C.
6. -30°C can be start-up at full load.
7. TR70MA120 & TR70MB120 of 115VAC full load meet DoE Level VI and 230VAC full load meet CoC Tier 2. TAIWAN KING PIN TERMINAL PVHI series and mate with JST housing XH series or equivalent.

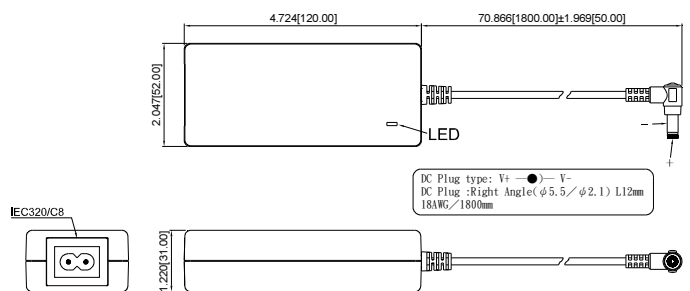
## Mechanical Specification

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

TR70MAXXX Series



TR70MBXXX Series



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