TRACO POWER

AC/DC Medical Power Supplies

TPP 450A Series, 450 Watt

- **High power density 3" x 5" open frame medical power supply**
- **450 Watt with forced air cooling 320 Watt convection cooled without derating up to 50°C**
- **Medical certification to IEC/EN/ES 60601-1 3rd edition for 2×MOPP**
- **EMC compliance to IEC/EN/ES 60601-1-2 4th edition**
- **Risk management process according to ISO 14971 including risk management file**
- **Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3**
- **Isolation (4000 VAC) and leakage current (< 100 µA) rated for BF applications**
- **An integrated variable fan speed controller allows for an easy use of an external fan**
- **Standard features: 5 V standby output 12 V aux output, Remote On/Off, Power Good Signal, variable fan speed**
- **Operating up to 5000 m altitude**
- **5 year product warranty**

IEC 60601-1 ES 60601-1
UL 62368-1

The TPP 450A Series of 450 Watt AC/DC power supplies feature a reinforced double I/O isolation system according to latest medical safety standards (60601-1 3rd edition, 2 × MOPP). The earth leakage current is below 100 µA what makes the units suitable for BF (body floating) applications. The excellent efficiency of up to 94% allows a high power density for the standard 3" x 5" packaging format.
Natural convection cooled power is 320W up to +50°C and 150W at +85°C. Thus you can power your medical device in a quiet and hygienic way as you don't need to run a fan to cool down the power supply. High reliability is provided by use of industrial quality grade components and an excellent thermal management. It makes the products an ideal solution for medical devices and for demanding safety and space critical applications.

Encased version see TPP 450 Series

www.tracopower.com/overview/tpp450

Models

Order Code	Output Power (max.)	Output Voltage (adj. ±8%)	Output Current natural convection	Output Current forced air cooling	Efficiency (typ.)
TPP 450-112A-M	450 Watt	**12 VDC**	**20.8 A**	**37.5 A**	**91 %**
TPP 450-115A-M		**15 VDC**	**16.6 A**	**30.0 A**	**92 %**
TPP 450-124A-M		**24 VDC**	**13.3 A**	**18.75 A**	**93 %**
TPP 450-136A-M		**36 VDC**	**8.86 A**	**12.5 A**	**93 %**
TPP 450-148A-M		**48 VDC**	**6.65 A**	**9.4 A**	**94 %**

Options

on demand (backorder with MOQ, non stocking items)	– model with 28 VDC / 16.1 A available – model with 53 VDC / 8.55 A available

Input Specifications

Input voltage range	– AC range (universal input) – DC range – Power derating at low input voltage		85 – 264 VAC (47 – 63 Hz) 120 – 370 VDC 1.33 %/V below 100 VAC
Input current at full load	– at 100 VAC – at 240 VAC		5.8 A max. 2.4 A max.
Input protection	– Internal fuse in line and neutral		T 6.3 A / 250 VAC
Zero load power consumption	(acc. ErP directive)	12 VDC models: other output models:	0.3 W typ. 0.5 W typ.
Leakage current	– at 264 VAC		100 µA max.
Power factor			0.95 min. (active power correction)

Output Specifications

Voltage set accuracy	– at 230 VAC		± 1%
Output voltage adjustment			± 8%
Regulation	– Input variation (85 - 264 VAC) – Load variation (0 - 100%)		0.2% max. 0.5% max.
Minimum load			not required
Temperature coefficient			0.02 %/K max.
Hold-up time	– at 115 VAC		14 ms typ.
Start-up time			2 s max.
Rise time			30 ms typ.
Ripple and noise (20 MHz Bandwidth)		12 VDC model: 15 VDC model: 28 VDC model: 36 VDC model: 48 VDC model: 53 VDC model:	250 mVp-p typ. (w. cap. 1µF/25V 1206 X7R MLCC) 300 mVp-p typ. (w. cap. 1µF/25V 1206 X7R MLCC) 280 mVp-p typ. (w. cap. 1µF/50V 1206 X7R MLCC) 360 mVp-p typ. (w. cap. 1µF/50V 1206 X7R MLCC) 480 mVp-p typ. (w. cap. 1µF/50V 1206 X7R MLCC) 530 mVp-p typ. (w. cap. 0.1µF/100V 1206 X7R MLCC)
Transiente response	– Peak deviation (50 - 75% load change) – Recovery time		3% Vout typ. 600 µs typ.
Overvoltage protection (Featured by main power output)			110 – 135% of Vout (latch mode)
Overload protection (Featured by main power output and standby power output)			115 – 150% of Iout max. (current limitation)
Short circuit protection (Featured by all outputs)	– Protection level 1 (nominal) – Protection level 2 (instantaneous high current)		continuous, automatic recovery (hiccup mode) latch
Auxiliary outputs	– Power source for fan (variable fan speed control) – Standby power source		12 VDC / 500 mA max. Refers to pin +Fan and –Fan 5 VDC / 2000 mA max. Refers to pin +Standby and –Standby
Capacitive load		12 VDC model: 15 VDC model: 24 VDC model: 28 VDC model: 36 VDC model: 48 VDC model: 53 VDC model:	31‘250 µF max. 20‘000 µF max. 7'820 µF max. 5'750 µF max. 3'500 µF max. 1'960 µF max. 1'600 µF max.

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.