

AC-DC ITE & Medical Power Module PAAM150 Series

Features:

- PCB Mountable Switching Power Module
- 4000VAC Input to Output 2MOPP Insulation
- Cooling by Free Air Convection
- High Efficiency up to 93.5%
- Active P.F.C. Power Factor >0.9
- <0.5W No Load Input Power
- ±5% Adjustable Voltage
- EMI for Both Class I (with PE) and Class II (without PE) Configurations
- Suitable for BF Applications with Appropriate System Consideration
- Remote ON/OFF Function
- 3-Year Product Warranty



Description:

The PAAM150 series of encapsulated, single output, through-hole AC/DC modules is specially designed for use in medical applications. This power dense 2.3" x 4.3" platform offers up to 150W of continuous throughput across a wide range of operating temperatures whilst maintaining low emissions and high efficiency. All models have remote ON/OFF and voltage adjustment features.

| Model Number | Max Output Wattage | Output Voltage | Output Current (A) max | Output Line Regulation | Output Load Regulation | Ripple & Noise (mVp-p) | Max Capacitive Load (µF) | Average Efficiency @ 230VAC |
|--------------|--------------------|----------------|------------------------|------------------------|------------------------|------------------------|--------------------------|-----------------------------|
| PAAM150-12 | 150W | 12V | 12.5 | ±1% | ±1% | 120 | 6000 | 93% |
| PAAM150-14 | 150W | 24V | 6.25 | ±1% | ±1% | 240 | 2000 | 93.5% |
| PAAM150-18 | 150W | 48V | 3.125 | ±1% | ±1% | 480 | 330 | 93.5% |

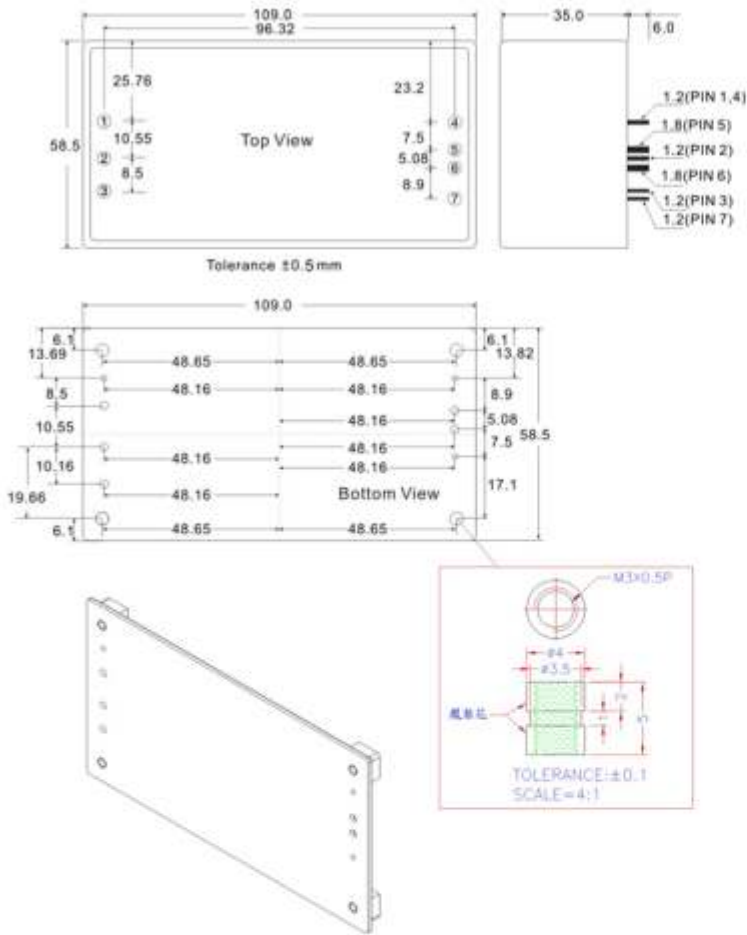
NOTES:

1. Ripple & Noise measured with 20MHz bandwidth with a 0.1µF ceramic & 47µF electrolytic capacitor across the output.
2. Hold-up Time measured at 90% Vout.
3. Please secure the power supply unit to your metal case by using the four screw holes in the corners for either Class I or Class II equipment
4. **Double pole, neutral fusing. Disconnect mains before servicing.**

| Specifications | |
|-------------------------------|----------------------------------------------------------------------------|
| Input | |
| Input Voltage | 90-264 VAC |
| Input Frequency | 47-63Hz |
| Input Current | <2.5 A max. (115 VAC) / < 125 A max. (230 VAC) |
| Inrush Current | <45 A max. (115 VAC) / < 90 A max. (230 VAC) |
| Leakage Current | <0.1mA / 264 VAC (Touch Current) |
| Power Factor | PF>0.9 at Full Load |
| Output | |
| Total Output Power | Up to 100W |
| Voltage Accuracy | ±2% |
| Line Regulation | ±1% |
| Load Regulation | ±1% |
| Hold Up Time | 10ms min. |
| Protection | |
| Over Power Protection | Auto-recovery, Hiccup mode |
| Over Voltage Protection | Auto-recovery |
| Over Temperature Protection | Auto-recovery |
| Short Circuit Protection | Protection level 1 (nominal): Continuous, Auto recovery |
| | Protection level 2 (instantaneous high current): Latch |
| Isolation | |
| Input—Output | 4000VAC or 5656VDC |
| Input-PE | 2000VAC or 2828VDC |
| Output-PE | 1500VAC or 2121VDC |
| Environmental | |
| Operating Temperature | -30°C...+70°C (with derating) |
| Storage Temperature | -30°C...+85°C |
| Temperature Coefficient | ±0.05%/°C |
| Altitude During Operation | 5000m |
| Humidity | 95% RH |
| MTBF | >250,000 h @ 25°C (MIL-HDBK-217F, Notice 1) |
| Atmospheric Pressure | 56 kPa to 106 kPa |
| Vibration | IEC60068-2-27 (10~500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes) |
| Shock | IEC60068-2-6 |
| General Specifications | |
| Dimensions | 4.3 x 2.3 x 1.38 Inches (109.0x58.5x35.0mm) Tolerance ±0.5 mm |
| Weight | 365g |
| Cooling Method | Free convection |

| Safety | |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Approvals | UL/IEC/EN 60601 3.1 rd Edition UL/IEC/EN 60950 AM2 UL/IEC/EN 62368-1 |
| *Consult with TT Electronics for information on additional country safety approvals | |
| EMC | |
| EMI (Conducted Emissions) EMI (Radiated Emissions) EMS (Noise Immunity) | EN55011 Conducted Class B EN55011 Class I class B / Class II class A EN60601-1-2 4th edition |
| *EMC filtering occurs internally within the module | |

MECHANICAL DIMENSION (Top View) Diagrams



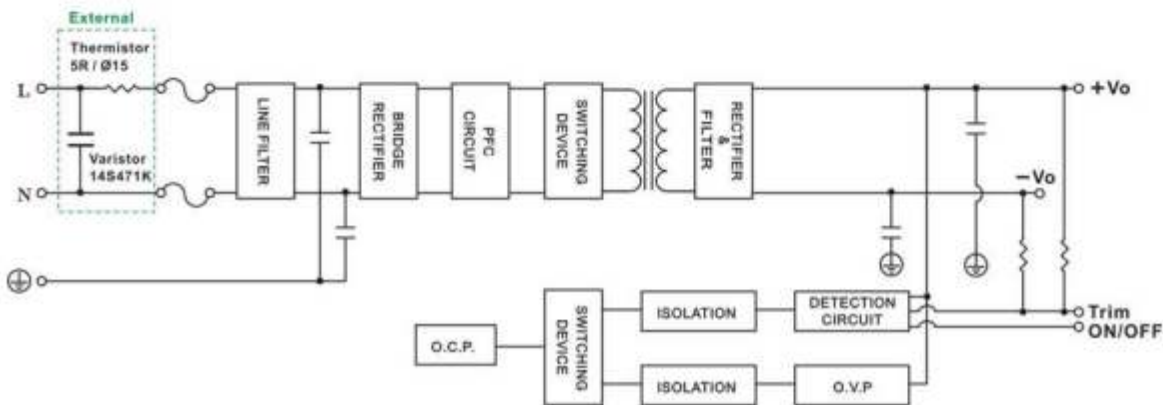
| PIN# | Φ | Single |
|----------------------------|------------|-----------|
| 1 | 1.2±0.1%mm | AC IN (N) |
| 2 | 1.2±0.1%mm | AC IN (L) |
| 3 | 1.2±0.1%mm | PE |
| 4 | 1.2±0.1%mm | ON / OFF |
| (Provide +5Vdc Controlled) | | |
| 5 | 1.8±0.1%mm | +DC OUT |
| 6 | 1.8±0.1%mm | -DC OUT |
| 7 | 1.2±0.1%mm | Trim |

Remark:

Please reserve the pin 4 hole on PCB.

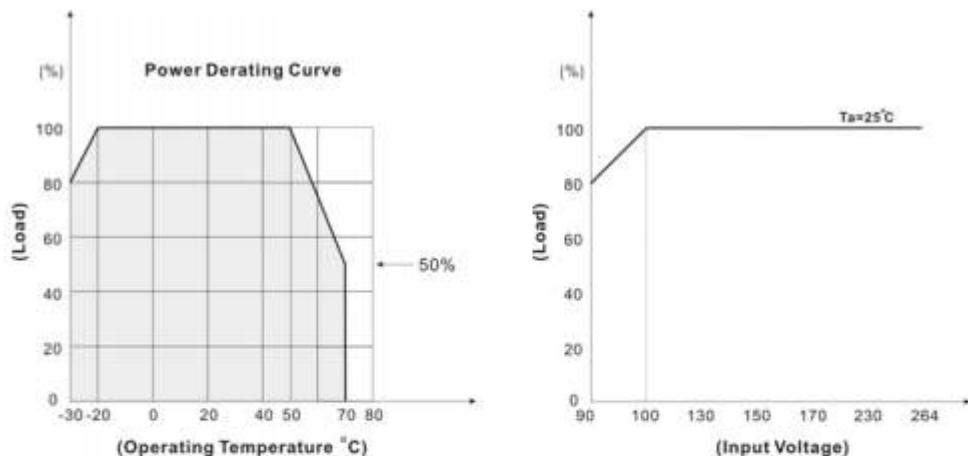
If the remote on/off function is not required, please connect the pin 4 circuit layout with pin6, or keep pin 4 floating.

BLOCK DIAGRAM



Diagrams

DERATING



TRIM

| | 12S | | 24S | | 48S | |
|-----------------|------|---------|--------|---------|------|---------|
| Trim → -V | +5% | 0% | +5% | 0% | +5% | 0% |
| | 34KΩ | ~ 10MΩ | 37.4KΩ | ~ 10MΩ | 38KΩ | ~ 10MΩ |
| Trim → +V | 0% | -5% | 0% | -5% | 0% | -5% |
| | 10MΩ | ~ 106KΩ | 10MΩ | ~ 270KΩ | 10MΩ | ~ 640KΩ |