

1 T807/808 General Information

This section provides a brief description of the T807/808 Switch Mode Power Supply along with detailed specifications

The following topics are covered in this section.

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1.1 Introduction

The T807/808 is a heavy duty, lightweight switching power supply capable of supplying up to 15A (T807) or 25A (T808) at 11 to 14V DC. The units require a mains supply of 230V/50Hz or 115V/60Hz (nominal values) which can be internally selected with a switch (if fitted) or wire links. Remote sensing of the output voltage is available as a standard feature: if connected, it will ensure that the output voltage remains within $\pm 1\%$ of the preset level from no-load to the full specified load, over the specified mains voltage and temperature ranges (refer to Section 7.6).

The T807/808 power supply is designed to power T800 series base stations. Specifically, the T807 will power 50W base stations, while the T808 will provide the current requirements for 100W base stations.

Electromagnetic compatibility (EMC) and operator safety are both important and critical parameters for the trouble free functioning of a switching power supply. Refer to Section 1.2.3 (EMC) and Section 1.2.4 (safety) for current specifications.

The T807/808 is protected against damage caused by faults in the line or load, or by temperature variations (refer to Section 1.2 for specifications). The protection features include:

- mains transient suppression
- mains inrush current limiting
- mains undervoltage lockout
- soft start
- output current limiting
- output voltage limiting
- output reverse polarity protection
- overtemperature shutdown.

The output voltage and current limit and overvoltage points are all adjustable and are preset during manufacture.

Note: On earlier model power supplies with an issue 03 PCB, the overvoltage point is **not** adjustable.

The T807/808 can be used to float charge a 12V battery under constant voltage conditions. The current limit circuit prevents the charging current from being excessive if the battery is completely discharged, and the internal rectifier diode will blow the external fuse in the event of the battery being accidentally connected in reverse. (refer to Section 7.5). An alarm output provides a logic 0 (0V) in the case of a mains and/or power supply failure, even if a battery is connected to the 13.8V output.

Note: On issue 03, a transient suppression diode across the power supply output prevents any damage if the battery is accidentally connected in reverse.

A T807/808 may be housed together with other Tait fixed equipment modules in a standard 484mm (19") rack frame, where it occupies the space of one standard 60mm module, to give an attractive and convenient installation.

1.2 Specifications

1.2.1 Introduction

The performance figures given are minimum figures, unless otherwise indicated, for equipment operating at standard room temperature (+22°C to +28°C).

Where applicable, the test methods used to obtain the following performance figures are those described in the EIA specification. However, there are several parameters for which performance according to the CEPT specification is given.

Details of test methods and the conditions which apply for Type Approval testing in all countries can be obtained from Tait Electronics Ltd.

Three different issues of PCB are covered in this manual, as classified by the last two digits of the IPN. Throughout this manual, differences in the specification or operation of the various issues of power supply are identified using these digits.

1.2.2 General

Basic Power Supply Concept	.. switched mode technology pulse width modulation
Switching Frequency	.. 166kHz typical
Overtemperature Protection	.. shuts down when main transformer temperature rises above 105°C
Cooling:	
T807	.. convection
T808	.. convection and forced air (fan)
Power On/Off Switch & LEDs:	
On: Switching Enabled	.. green "On" LED glows
Off: Switching Disabled	.. red "Standby" LED glows
Other LEDs on Issues 05 and 07 only :	
Overcurrent	.. red "Overload" LED glows
Overvoltage	.. green "On" and red "Overload" LEDs flash on and off
Note:	To remove the mains voltage from the PCB, disconnect the IEC mains connector.
Efficiency:	
T807	.. 80%, 10-15A load typical
T808	.. 80%, 15-25A load typical

Temperature Range:

Operation Within Specification	.. -10°C to +60°C
Operational	.. down to -30°C

Isolation:

Input To Output	.. 3000V AC, 50Hz, 1 minute
Input to Chassis/Earth	.. 1500V AC, 50Hz, 1 minute
Output To Chassis/Earth	.. 500V AC, 50Hz, 1 minute

Dimensions:

Height	.. 191mm
Width	.. 60mm
Length	.. 330mm

Weight	.. 2.5kg
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1.2.3 EMC Conformity

EMC	.. all equipment bearing the above logo conforms with EEC EMC Directive 89/336 and is in accordance with the requirements of ETS 300 279.
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Note: Refer to Section 3.1.6 for **customer requirements** in order to meet the above emissions specification.

1.2.4 Safety Approvals

Safety	.. complies with IEC950, EN60950 & AS3260
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Note: Refer to Section 3.1.7 for **customer requirements** in order to meet the above safety specification.

1.2.5 AC Mains Input

Voltage	.. 200-264V or 100-135V, 50/60Hz (selection by internal switch or wire links)
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Overvoltage	.. infrequent surges of up to 276V AC and less than a few hours' duration will not damage the T807/808
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Transient Suppression Threshold:

230V	.. 276V AC
115V	.. 140V AC

Undervoltage Lockout:
(no load to full load)

230V	.. <185V AC, 175V AC typical
115V	.. <95V AC, 90V AC typical

Input True RMS Current:

T807- 230V $\pm 10\%$.. 2.5A max.
115V $\pm 10\%$.. 4A max.
T808- 230V $\pm 10\%$.. 4A max.
115V $\pm 10\%$.. 6A max.

Input Fuse (Internal):

T807	.. 5A slow blow
T808	.. 8A slow blow

Connection .. via IEC plug on rear panel

Power Factor @ Full Load .. >0.55
(exact factor depends on impedance of mains supply)

1.2.6 Output

Voltage .. 13.8V DC (adjustable 11-14V)

Voltage Regulation .. $\pm 1\%$
(remote sensing connected;
over specified load, temperature
and mains voltage range)

Current

Continuous Operation Up To +40°C:

T807	.. 0-15A DC
T808	.. 0-25A DC

Continuous Operation Up To +60°C:

T807	.. 0-12A DC
T808	.. 0-22A DC

Duty Cycle Operation Up To +60°C:

75% Tx (<30 minute period)

T807	.. 15A DC
T808	.. 25A DC

25% Rx (<30 minute period) .. 1A DC

Note: These current ratings apply to a typical remote sensing operation, i.e.13.8V at the load terminals with <0.5V drop across the wiring from the power supply to the load.

Output Overvoltage Protection (**Issue 03**):
(zener transient suppression diode)

Voltage Threshold	.. 16V \pm 5%
Peak Power (1ms, 22.5V)	
T807	.. 600W
T808	.. 1500W

Note: This device is likely to short circuit if the peak power rating is exceeded and will need to be replaced.

Output Overvoltage Protection (**Issues 05 & 07**):
(main rectifier diode)

Voltage Threshold	.. 15V \pm 2%
	(15A (T807) or 25A (T808) at 240V input)
	17.8V
	(Zero load at 200V input)

Output Hum & Noise:

(mains voltage 230V \pm 10%, TA = 25C
100/120Hz (@ max. rated load)

.. <20mV pp
<10mV RMS

Wide Band Noise (200Hz to 30MHz):

Load 0 To 1A	.. <20mV pp
Load 1A To Full Load	.. <10mV pp

Current Limit:

T807	.. 16A
T808	.. 27A

Mains And/Or Power Supply Failure
Alarm Output:

OK	.. +Vout (13.8V typ.) via 1k resistor
Fail	.. -Vout (0V) via 11k resistors

Output Connectors:

Type	.. screw clamp
Flexible Wire Size	.. 0.5 to 4.0mm
Current Rating	.. 36A
Insulation Stripping Length	.. 13mm

Remote Sense & Fail Alarm Connectors:

Type	.. screw clamp
Flexible Wire Size	.. 0.5 to 1.5mm
Current Rating	.. 16A
Insulation Stripping Length	.. 10mm

1.2.7 Battery Charging Operation

Reverse Polarity Protection (**Issue 03**) .. via internal zener transient suppression diode and external fuse

Reverse Polarity Protection (**Issues 05 & 07**) .. via internal main rectifier diode and external fuse

Note 1: For safe operation an external fuse **must** be fitted in the battery line.

Note 2: The T807/808 does not compensate for the temperature dependence of the battery.

Reverse Bleed Current
(mains and/or power supply off) .. <5mA

Battery Type .. constant voltage charging (e.g. conventional automotive lead acid)

1.3 Versions

- T807-10:** Switching power supply, 13.8V DC output 230/115V (50/60Hz) internally selected mains inputs (factory set to 230V/50Hz) 15A continuously rated power supply for 50W base stations
- T808-10:** Switching power supply, 13.8V DC output 230/115V (50/60Hz) internally selected mains inputs (factory set to 230V/50Hz) 25A continuously rated power supply for 100W base stations

