

7 T807/808 Installation

The following section gives a brief description of the basic rack mounting and wiring procedures.

The following topics are covered in this section.

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7.1 General

The DC output wiring must be of sufficient gauge to carry the current required without excessive voltage drops, i.e. <0.5V in total, even with remote sensing connected. The minimum recommended wire sizes are as follows:

T807 (15A rated output current):	2.0mm (e.g. 152/153 auto cable)
T808 (25A rated output current):	3.0mm (e.g. 154/155 auto cable), or 2 runs of 2.0mm cable

Use only an IEC type connector for normal mains input wiring and ensure that this wiring has a current rating of at least 5A for the T807 and 10A for the T808.

The output is factory set to 13.8V (no remote sense connected; refer to Section 4.3.2) and the current limit set to 16A for the T807 and 25A for the T808. Refer to Section 4.3.3 if it is necessary to change these values.

7.2 Rack Mounting

The T807/808 is designed for use in a standard 483mm rack frame using the supporting guide rails supplied with the units. **Do not** install this unit with any other type of guide rail, as this may prevent adequate ventilation through and past the unit.

The lower guide rail is located in the rack frame with three screws, two at the rear and one at the front. The short upper guide rail is located with just one screw. The unit is secured into the guide with two front panel mounting screws.

Although the T807/808 is a high efficiency switching power supply, a considerable amount of heat is generated during normal operation. An adequate flow of cooling air is therefore essential for reliable operation. **Do not** operate this unit in a completely enclosed cabinet.

If continuous operation at high ambient temperatures is necessary, forced air cooling is recommended for additional reliability. It is estimated that the average life expectancy of this unit will double with every 10°C drop in ambient temperature.

7.3 Rack Frame Earthing

The power supply case is internally connected to mains earth. Because the unit's case and the rack frame in which it is usually installed are painted, a secure electrical earthing connection between the unit and the rack is **not** guaranteed (i.e. it is reliant on breaking through the paint coating).

It is therefore strongly advised that an additional and secure electrical connection is provided by means of the supplied earth lead (see below). Failure to do so may result in harmful voltage potentials between the power supply and rack frame, and/or miscellaneous power supply switching noise problems in both receivers and transmitters.

Fit the "push-on" connector on one end of the earthing cable onto the earthing tab at the rear of the power supply.

Fit the slotted spade connector on the other end of the cable under a conveniently located screw on the rack frame. Ensure by testing continuity that a secure electrical and mechanical connection is achieved.

Alternatively, the slotted spade connector can be cut off and the earth wire fitted to a -DC rail terminal, either on the rear of the power supply or on a -DC rail (0V) terminal nearby. This should be done only if a mechanically and electrically secure connection between -DC rail and the rack frame is installed as part of the system.

7.4 Noise Interference Suppression Earthing

7.4.1 Introduction

The problem of noise interference may occur in installations which include T300 series receivers and T807/808 power supplies. The procedures outlined in the following Sections will minimise the possibility of noise interference from three main sources:

noise directly picked up via the aerial system if the receive aerial is within approximately 3 metres of the power supply;

noise directly radiated into the receiver;

noise carried via the 13.8V line to the receiver.

These procedures should also be followed to ensure that both the individual units and the rack frame are earthed to mains earth for reasons of mains safety.

7.4.2 Mounting

The T807/808 should be mounted as far as possible from the receiver, i.e. in a typical repeater system there should be a transmitter, duplexer and speaker panel between the power supply and the receiver. Mount the aerial at least 3m from the T807/808.

7.4.3 Earthing

Ensure that all the individual units (receiver, transmitter, power supply) are earthed to the front of the rack via the front panel and the rear of the rack frame via a separate earthing strap.

T807/808 power supplies already have the front panel earthed to the chassis. On other units, a small amount of paint may need to be removed from the back of the front panel

around the button head screws to ensure a good earthing contact. The upper and lower M3 x 8mm front panel mounting screws require M3 internal shakeproof washers (IPN 353-00010-13) to break through the paint and earth the front panel to the rack.

T807/808's manufactured after June 1991 have an earth terminal at the rear of the unit which should be connected securely to earth. Other units will require a strap from the chassis earth to the rack in the immediate vicinity of the unit. This can be done via the negative rail for each unit.

7.4.4 Filtering

The 13.8V supply to the receiver can be filtered to prevent noise entering and desensitising the receiver.

Fit one Tait No. 8 inductor (IPN 056-00010-08) in the positive lead and one in the negative lead.

Note: Fit the inductors to the receiver supply leads only. The maximum current handling capability of the No. 8 inductor is less than the T807/808 maximum output current.

7.5 Float Charging A Battery

The T807/808 power supply can be used to float charge a 12V battery under constant voltage conditions (e.g. a conventional lead acid battery). The current limit circuit will prevent the charging current from becoming excessive if the battery connected is completely discharged.

For short circuit and reverse polarity protection, it is essential that a fuse of suitable rating (15A in T807 and 25A in T808) is inserted in the battery line.

Issue 05 & 07. The T807/808 contains an internal rectifier diode (**D43**) which will protect the power supply by blowing the fuse if a battery is accidentally connected in reverse.

Issue 03. The T807/808 contains a 16V transient suppression diode (**D46**) across the output which will protect the power supply by blowing the fuse if a battery is accidentally connected in reverse.

A series charging diode is not required to isolate the battery from the power supply in the case of mains failure, as the reverse discharge current back into the supply is <5mA.

Note: The T807/808 does not compensate for the temperature dependence of lead acid batteries. The output voltage will need to be adjusted to suit the battery and ambient temperature.

7.6 Output Voltage Remote Sensing

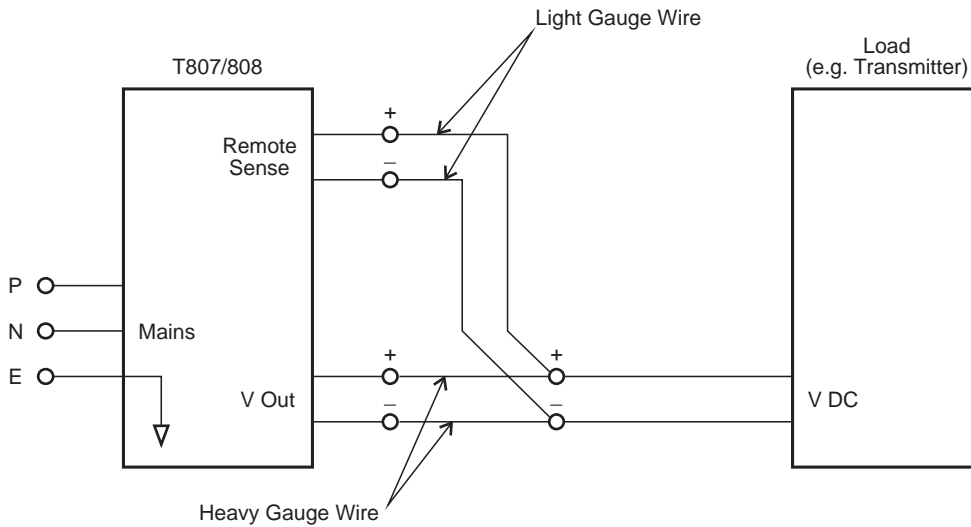


Figure 7.1 Output Voltage Remote Sensing

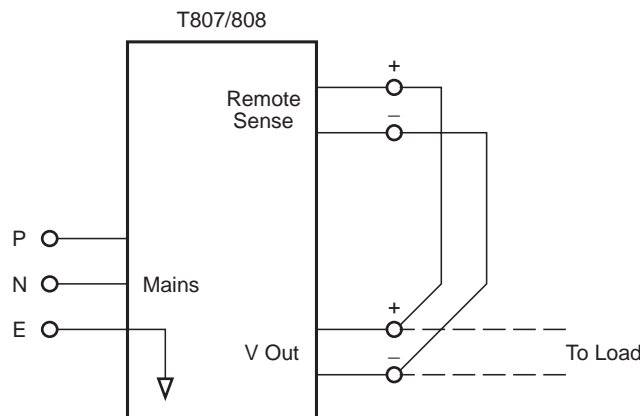


Figure 7.2 ±1% Constant Output Voltage By "Local Sensing"

To maintain the supply voltage within a tolerance of $\pm 1\%$ at the load terminals (e.g. transmitter), remote sensing is provided on 2 extra screw terminals at the rear of the T807/808.

To keep power dissipation in the supply output wiring **and** the power supply to a minimum, it is recommended that the output wiring is of sufficient gauge to limit the voltage difference between V_{out} and V_{DC} to a maximum of 0.5V (refer to Figure 7.1).

Note: **Issue 05 & 07 Only.** The overvoltage protection pot RV81 may need to be readjusted if maximum current is drawn and long leads are used to the voltage sense points.

To maintain the voltage within a tolerance of $\pm 1\%$ at the power supply output terminals, it is recommended that the remote sense terminals are connected directly to the output

terminals (refer to Figure 7.2).

Note 1: Ensure that the remote sense connections are made with the correct polarity (i.e. "+" to "+" and "-" to "-") before the mains supply is connected. Shorting of the remote sense connections on a running supply **before** they are connected to the output wiring will result in the destruction of the T807/808 overvoltage diode, D46 (refer to Note 4 below).

Note 2: As the output voltage is factory set to 13.8V with **unconnected** remote sense terminals, connection of these terminals will result in a slight change in the nominal output voltage (i.e. from 13.8V to approximately 13.5V). If required, the nominal output voltage can be readjusted (refer to Section 4.3.2).

Note 3: When remote sensing and float charging are set up as part of a system, it is recommended that the actual battery charging voltage is close to 13.8V (or its temperature compensated equivalent). Voltages above or below the nominal float charge value will mean either the battery is overcharged (high voltage) or never fully charged (low voltage).

Note 4: When a fuse and/or switch is fitted in the output wiring between the power supply and the load, it is essential that the remote sensing is connected to the **power supply side** of the switch or fuse, as shown in Figure 7.3.

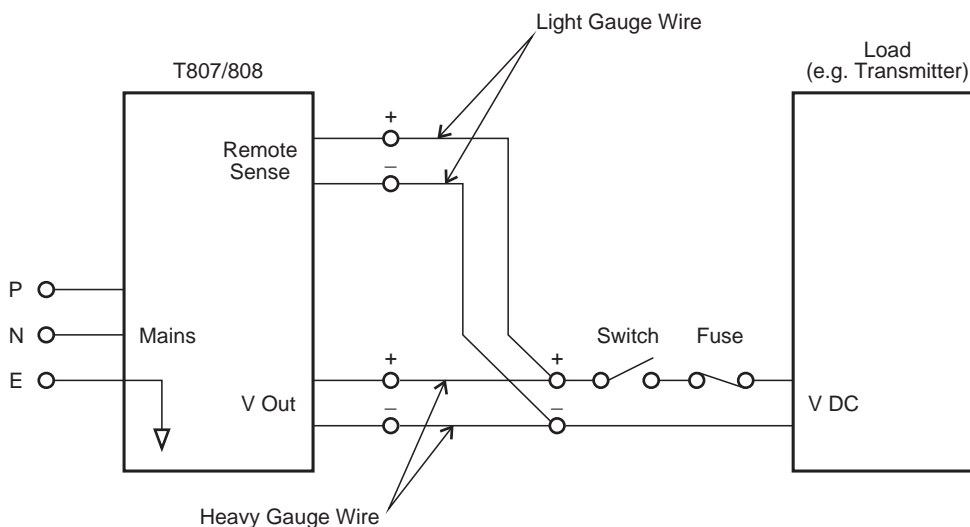


Figure 7.3 Output Voltage Remote Sensing With Fuse And/Or Switch

Failure to do this will result in the destruction of the main rectifier diode D43 (**Issues 05 & 07**) or the overvoltage diode D46 (**Issue 03**), in the T807/808 when the fuse or switch is open. This happens when the power supply "sees" 0 volts across the remote sense terminals and the output voltage is then increased to compensate for the apparent reduction of output voltage.

7.7 Parallel Operation

T807/808 power supplies may be operated in parallel as follows:

Set the output voltages to within 0.1V of each other.

Connect the supplies together with equal lengths of output wire.

Note: With very light or no load, only one power supply may have its "On" LED illuminated. This is normal and the LED's on the other supplies will illuminate as soon as the load is increased.

7.8 Mains And/or Power Supply Failure Alarm

A mains and/or power supply failure alarm output signal (to -DC rail/0V) is available on the T807/808 rear panel for system monitoring purposes.

Mains & power supply OK: approx. +Vout (via 1k resistor - typ. 13.8V)

Mains &/or power supply failure: approx. -Vout (via 11k resistors - typ. 0V)
(with or without a battery across main DC output)

This alarm output can be directly connected to an optocoupler input of a T802 remote monitor unit.