

DRAE 24 AMP POWER SUPPLY

This Power Supply is specifically designed to operate mobile transceivers. It will supply 24Amps continuously (40 Amps surge), during transmit at 13.8V. If used at full power, the transmit periods should be limited to 15 minutes or the thermal protection may reduce the available current. The Power Supply must always be operated with a free flow of air into the base and out of the top of the cover. Although the supply has thermal protection, operation of any electronic equipment at high temperatures reduces the reliability.

CIRCUIT DESCRIPTION

Regulation is provided by IC1d which uses the 5.6V from D6 as a reference. TR1 and TR2 boost the current to 6 Amps. IC1a, IC2c and IC2d ensure that TR4, TR6 and TR8 respectively provide the same current as TR2, thereby raising the output to 24 Amps. P4 adjusts the voltage to 13.8V.

IC1c operates the current limit, comparing the voltage across R12 with a reference from P2. R6, R7 and R4 provide foldback of the current limit to protect the power transistors from excessive power dissipation during a short circuit. R20 and C5 allow a high, but safe, surge current by delaying the current limit and averaging the voltage from R12.

IC1b operates the thermal protection, if the voltage across D2 drops to the reference from P1. This is set to a nominal 90 deg C.

In the unlikely event of a failure, it is possible for the output to rise above 14V. If the voltage exceeds 16V, D4 will turn on TH1, clamping the output to 1V or less. Should TH1 have been tripped accidentally, TR9 will cut off the current to TH1 and allow the supply to automatically reset.