

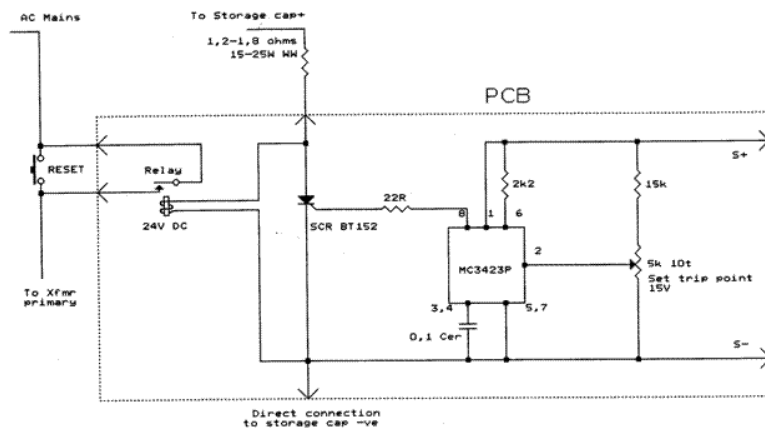
# A Radio Protection Scheme easily applied to any DC Power Supply

ZS6KR

Following serious damage to several expensive radios by some club members, the desire for better protection in case of power supply series transistors failing and thus applying some 18-25V DC to the radio, was put forward. Most power supplies appear only to be fused for over-current or electronically current limited, *but these are intended to protect itself and the load to some degree when experiencing an external load fault - not self-failure.*

The author picked up some useful tips on our PARC Monday 2m Technical Net as to where this was applied in the still famous Marchwood design of 1983 and investigated the possibility of hijacking the idea for universal use. The end result was a small PCB with six connections that can be built in to any existing power supply to act as a DC output over-voltage detector, mains circuit breaker and storage capacitor rapid discharger.

There is no messy intentional blowing of fuses applied and the original text correctly states that method is in any case to be too slow if you wish to blow the internal 20-25A fuse real fast. The circuit employed is sensible and needs no structural alteration.



The IC is a Motorola device (still available), the SCR a 25A device and R is composed of two values rated at 10W each to make up the required maximum resistance for fast discharge. With typically 68000µF as a storage capacitance, the discharge time to 63% of the original capacitor voltage will be  $\tau = RC = 1.5\text{ohms} \times 68000\mu\text{F} = 100\text{msec}$ . Much before that the transformer primary relay has dropped out and energy replenishment cannot take place. The discharge to almost zero is another 150 msec or so but becomes irrelevant. The supply is then indefinitely off.

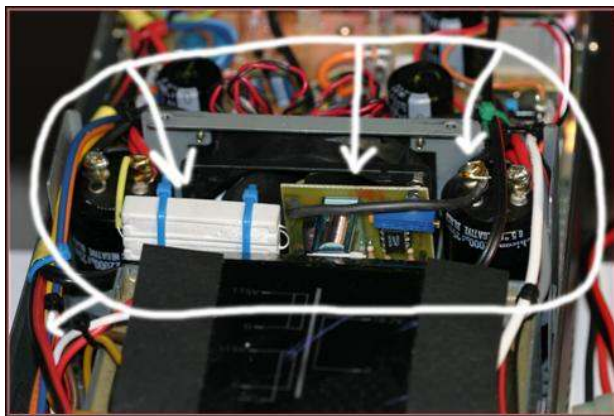
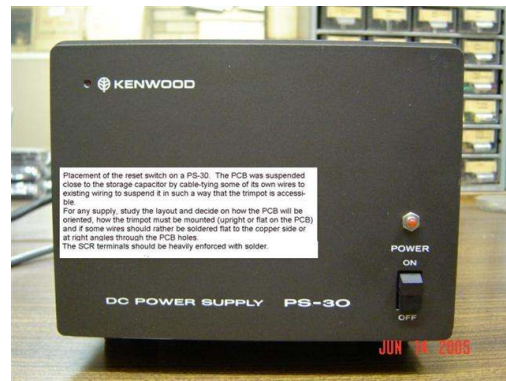
Once a trip has occurred, *a manual reset is not recommended* and the radio should be disconnected and the supply tested on open circuit. If the output is much higher than 13,8V, it needs repair and your radio should be intact.



## Installation examples

### Placement in a Kenwood PS-30 and PS-53 supply.

The reset button can be placed on the front, inside, or rear panel.



Stop press: Kits at R80 each should be available from the author at the time of publication. Bookings preferred.