

A lookalike TCS Power Supply Unit

Ken Brooks G3XSJ



When first licensed as a spotty youth in the late 60's, it was customary to do a tour of local operators to see their stations. Unlike today where there is a tendency to use "black box" appliances, these visits revealed an astonishing variety of homebrew, commercial amateur and ex military equipment unlikely to be seen today except perhaps among VMARS members. During one of these visits I first saw a very neat station that worked well, the TCS transmitter and receiver. I had almost forgotten about it until I came across occasional mentions in my collection of old RSGB Bulletins and VMARS publications. So when a receiver complete with its original Cannon connector turned up at NVCF the temptation was irresistible, and my enthusiasm was fired. An advert in VMARS turned up a very original transmitter and remote unit, further searches produced the remaining connecting cable, but of the hefty and hernia-inducing mains power supply there was no sign.

Thinking around the absence of this vital item had me come up with the idea of building a mains PSU, further thought and the recent availability of a compact Heathkit HP-23 PSU crystallised ideas into action. Subject to availability of original TCS parts, I would build the HP-23 into a spare TCS cabinet and make a matching item of equipment that would incorporate some design changes over the original to improve safety.

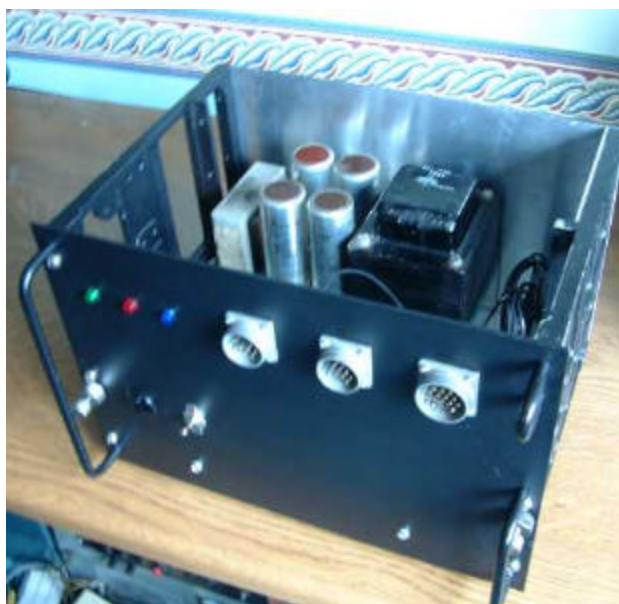
The TCS is designed to switch power remotely, and in the case of the original mains supply this means bringing the national grid through 60 year old connecting cables to the each item of equipment. More worrying, if the remote unit or transmitter cable is unplugged from the original power supply the exposed male pins of the Cannon connectors are at full mains potential. I decided to improve on this by having separate 12 volt energising supplies to switch the mains, transmitter heaters and high voltage supply by means of relays. It appeared fairly straightforward to reconfigure the high voltage supply of 800 volts to deliver the 400 volt TCS transmitter requirements by converting the HP-23 bridge rectifier to full wave, and breaking the secondary supply to obtain separate switching. However, the transmitter relay supply needed special care and attention because the designer overcame the need for an extra pole on the phone/cw switch by means of a relay. This is permanently energised when switched to phone and if the relay supply regulation is poor, the voltage across this the coil will rise when the transmitter relays are in the receive state and not loading the supply. This of course is the normal state so the phone/cw relay is vulnerable to having its coil burned out by a continuous overvoltage - TCS users be warned! The risk of this occurring was minimised by building a separate 12 volt regulated DC relay supply on a sub chassis. As the HP-23

already provides 12 volts and 250 volts, receiver supplies are available without further modification.

Through the kindness and generosity of VMARS members a cabinet, original chassis castings, handles, connectors and fasteners were obtained. With some hefty aluminium sheet guillotined to size, and a new bench drill and hole cutters, a front panel was made to align with the fixings on the castings. This involved some very precision drilling (by my standards) with the constant fear that a hole might go astray and ruin the project.

The wiring followed that of the original equipment at the connectors but obviously needed changing to accommodate the HP-23 and the extra relay switching. When the idea was germinating there seemed to be plenty of space inside the cabinet but it soon filled up, making the later wiring very fiddly, especially as the cabinet is quite deep.

The finished result is shown in the photographs. It's quite presentable, compact, and lighter and electrically safer than the original. Although little more than a packaging exercise it



illustrates a novel way of overcoming the perennial problem of providing power supplies for old valve equipment, even if I cheated a little by adapting a commercial unit.

My plans could not have come to fruition without the assistance of fellow VMARS members, to whom I offer my grateful thanks. Finally, for a wide-eyed teenager those early "station visits" turned up some real characters and not just in a wireless sense. As to station safety, my youthful eyes spotted some frightening electrical bodes best not mentioned in these pages, falling most definitely in the "don't try this at home" category.