

**Solar powered sites - standby battery low voltage disconnect.****Issue No.: AN010-01****Author: Product Support - Brisbane**

Problems may occur with the radio equipment when the supply voltage drops below the radio manufacturer's recommended minimum operating voltage.

The T800 range of products is no exception. It has a recommended minimum operating voltage of 10.8 volt, below this, the product's operating performance is questionable.

It is therefore very important that a battery disconnect circuit be utilized that disconnects the radio equipment when the battery voltage drops to around 11 volt. If this is not done the equipment performance may well deteriorate to a point where it is unusable, or the equipment may fail altogether. Added to this is the fact that the radio equipment will still draw current long after it has stopped working, potentially reducing the battery voltage to a very low level, which could lead to premature battery failure.

Tests have shown that certain types of battery disconnect units do not reliably disconnect the battery from the equipment. In tests it was found that reducing the supply (battery) voltage to just above the disconnect voltage, and then rapidly reducing the voltage by a volt or two, could cause the disconnect device to fail to disconnect. This situation can occur when transmitters on the site are activated. The additional current required by these transmitters, will cause a rapid drop in voltage on discharged batteries.

A recent example has shown that this situation may cause the battery voltage to drop below the minimum operation voltage, (9.6 volt in this case), of the disconnect device. Under these conditions the device failed to carry out its appointed task. In a repeater or repeater/link setup this situation could easily occur.

A typical radio site may have a standby current in the order of 0.5 A, but transmit currents of 4.5 A for a 25 watt TX, 15 A for a 50 watt TX.

It can be seen therefore, that the sagging battery voltage may well suffer a rapid drop when the TX is keyed up.

This situation may possibly be overcome by choosing a disconnect device that will operate reliably at a much lower voltage, maybe 5 to 6 volt, or by setting the disconnect voltage higher, maybe 11.5 or 12 volt.

In rare cases the T800 series two units have been known to lose their programmed default channel when run on low voltage (outside the recommended operating range). If it is suspected that this situation might occur, then the channel should be selected with the BCD switch on the backplane PCB, to ensure that when the power is restored, the unit powers up on the correct channel. Fitting the second "D" range kit (T800-03) will facilitate backplane PCB BCD addressing.