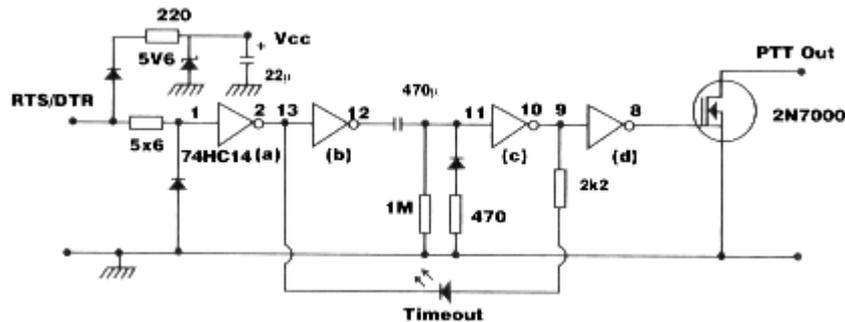# Watchdog Timer



Using a PC to control transmit/receive switching, such as is usual for most data mode software, means there can be a remote possibility that a computer crash or software malfunction could leave the transceiver on 'transmit' indefinitely. The solution is then to reboot the computer, remove the interface connector or switch off the power to the rig. More commonly though some other programme may be started that takes control of the serial port while it is still connected to the transceiver. With many modern rigs, the only indication that it is in transmit is a tiny LED that can easily go unnoticed, particularly if no RF is actually being generated to give an indication on the power or SWR meters due to the lack of any audio drive.

Most data mode software interfaces to the PTT line by making use of the handshaking lines on the serial (or COM) port: Data Terminal Ready (DTR) or Request to Send (RTS) appear on pins 4 and 7 respectively on the nine-pin PC RS-232 connector. The circuit shown is for a watchdog timer to replace the normal interface circuit.
During normal operation, it passes the DTR / RTS state straight through to the transistor controlling the PTT line. However, after approximately four minutes of transmitting the PTT line is released and the LED lights up to show an error, or 'time-out' condition. The 74HC14 has Schmitt trigger inputs and the time delay is generated as C2 charges until the voltage on pin 11 drops below the gate threshold point.

The circuit is self powered via a diode and zener diode combination, making use of the fact that the RS-232 line can quite easily deliver several milliamps of current. For a longer time-out period, the value of the 470uF capacitor can be increased, although new, 25v working devices should be used to keep leakage current as low as possible. By increasing the value of the 1 Megohm resistor also, longer time-out periods can be achieved. The 470 Ohm resistor ensures a rapid discharge of the timing capacitor when returning to receive.
The LED needs to be an ultra-high brightness type, because only a couple of milliamps can be spared to operate it without overloading the RS-232 line too much.

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