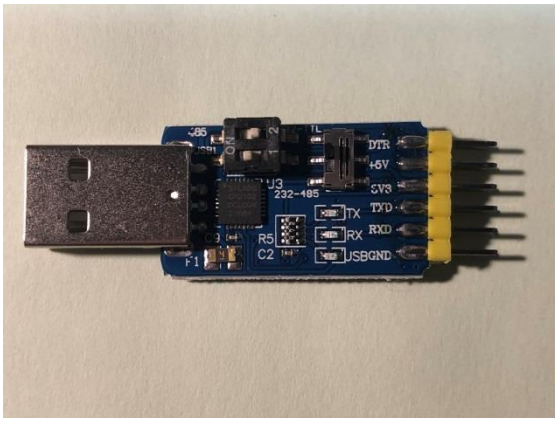
Note 13:

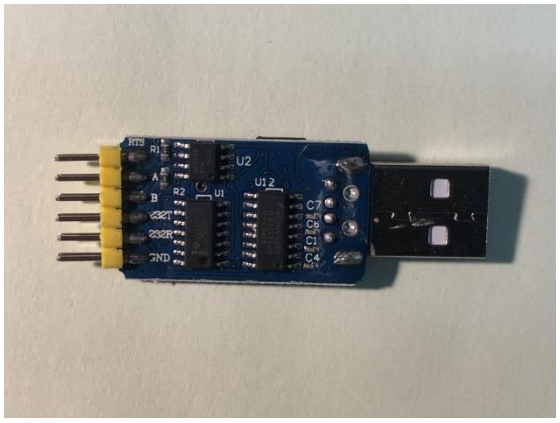
KM3000/4000 simple programming lead

This simple programming lead is for all KM3000/4000 radios regardless of the connector on the back of the radio

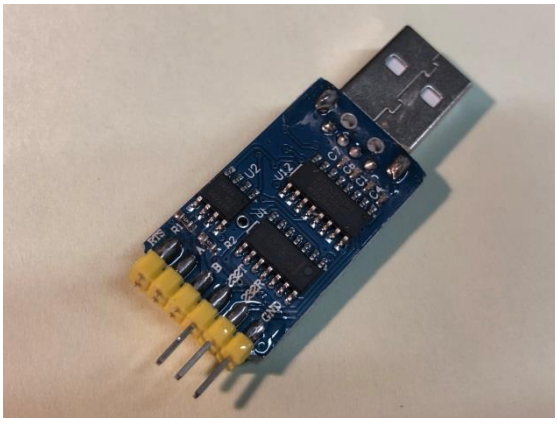
The lead will connect a USB port on a computer directly to J11 serial pins on the logic board under the bottom cover of the KM3000/4000 radio. The lead is built using a simple RS232 to USB module and a 7 pin header plug from a scrap computer cable. These RS232 to USB modules are commonly used as serial ports for Arduino based projects. They can easily be found on line from EBay, rallies and other suppliers for less than £3.00 each. A Google search for "**6 in 1 Converter Module USB CP2102 to TTL RS232 USB TTL to RS485**" will show many hits and places to purchase. Note, they are available in various colours and styles however we have only tested the blue module as detailed in this guidance note.

1. Below, the module as purchased showing both sides.

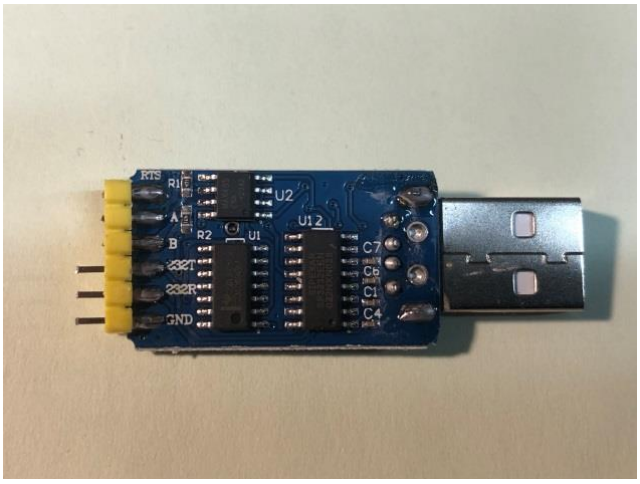




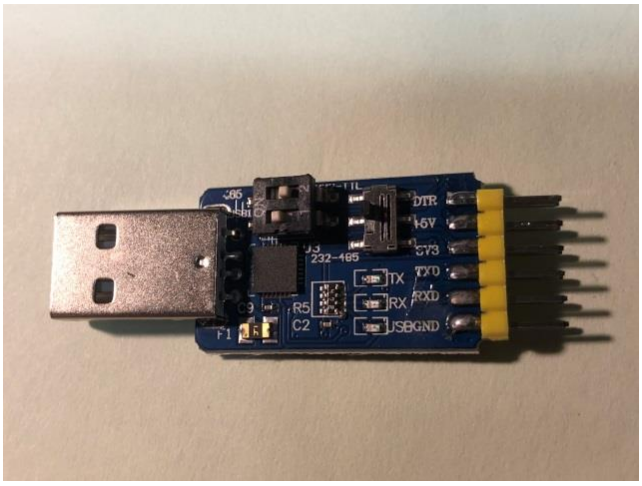
2. Carefully remove the unused pins to leave just the three RS232 pins (232T, 232R and GND).



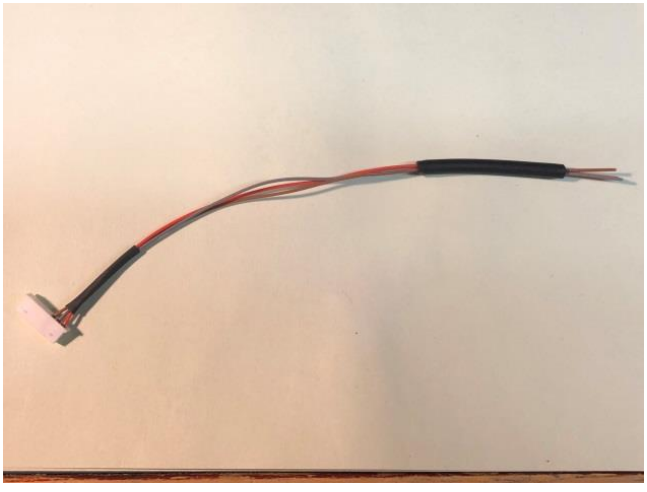
3. Then cut the remaining three pins short leaving about 3mm exposed.



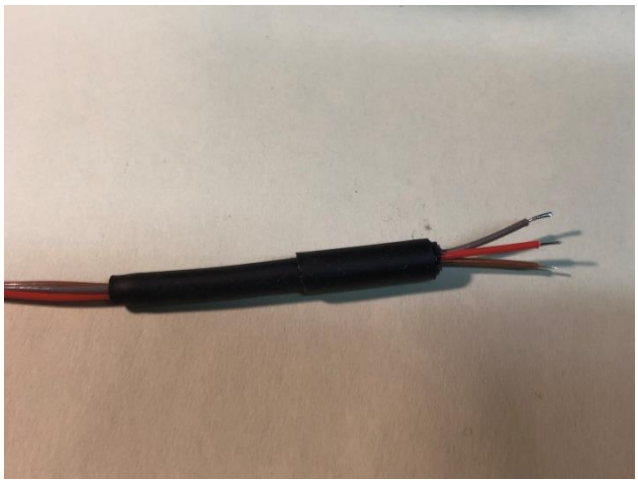
5. There are three small switches on the PCB selecting the RS232 setting. The top switch needs to be in position 2, the bottom switch to the ON position, and the single vertical switch which is to the left of where DTR is printed on the PCB to the UP position towards the edge of the board.



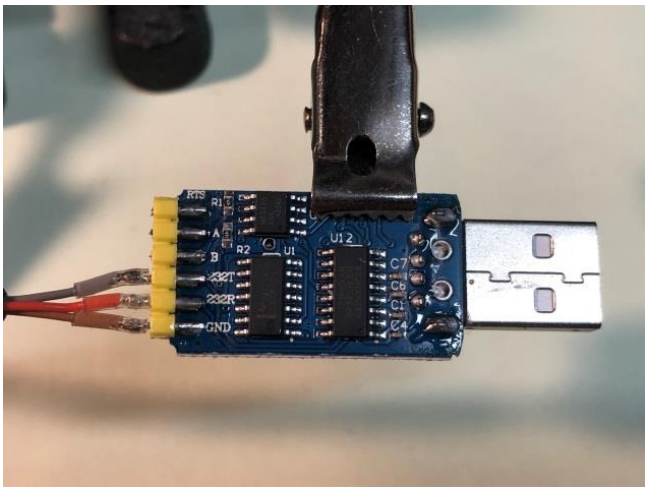
6. Using heat shrink sleeving prepare a lead with a 7 pin connector that will plug into J11 on the logic board. Add additional heat shrink sleeving to the end of the wires that will connect to the module.



7. Strip and tin the ends ready to solder the wires to the module.

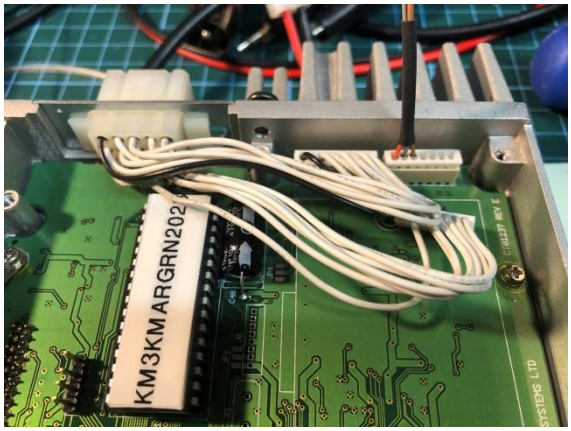


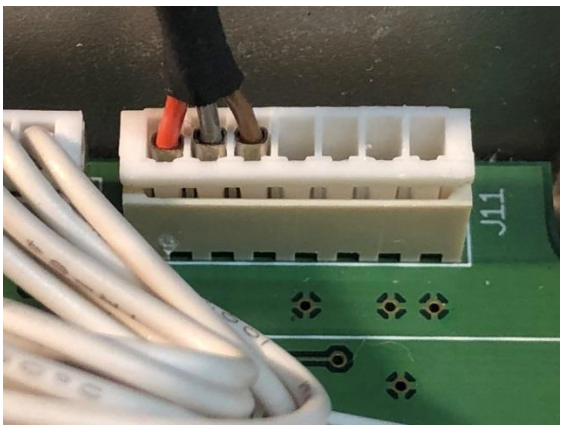
8. The wires are connected to the module as follows:



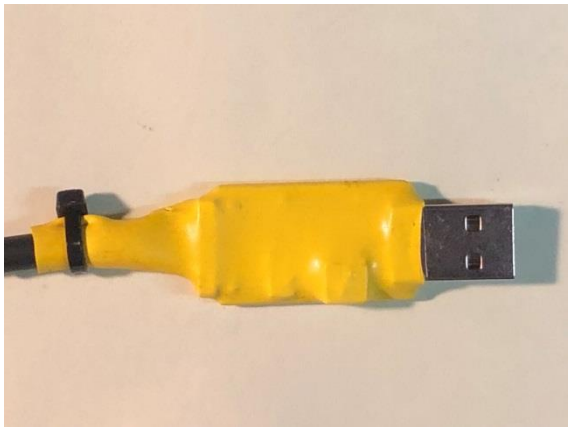
Grey	Pin	3	232T	TX
Orange	Pin	2	232R	RX
Brown	Pin	1	GND	GND

9. Location of J11 header on the logic board showing the wire positions and colours.





10. The completed module can be covered in heatshrink sleeving to protect the components and switches. (It may be advisable to snip the top off the switches to stop them moving when the sleeving is shrunk down). Do not use Superglue in the switches as this will cause electrical failure of the switch. Do not overheat the module, use a heat gun not a flame.



If it is preferred to have a longer lead the module can be extended with a standard USB male to female lead.