## 3.9 Using morse code

During WWII the German army used morse code to transmit messages across the world. If you want to know how this sounds, you might want to explore the built-in morse generator of your **Enigma-E**. Please note that you cannot use the buzzer on the main PCB for this. If you want to hear the morse code, you need to connect another (optional) buzzer to the terminals of the serial port (in the top right corner of the board). Also, note that jumper ② should be removed.

The extra buzzer should be connected to the serial port as follows:

BUZZER

+   -

TXD   GND

RXD

Top right corner of PCB
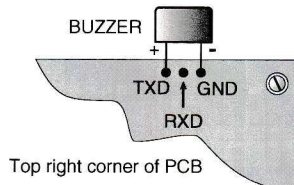
The plus terminal of the buzzer (the longest leg) should be connected to the leftmost terminal of the serial port (TXD). The other leg of the buzzer (minus) should be connect to the rightmost terminal of the serial port (marked GND). Once morse is enabled (i.e. jumper ② is removed) the serial port cannot be used for communication with a PC.

As the TXD line is an open-collector output, you may drive e.g. a Short Wave SSB transceiver directly and transmit your morse code.

If you want to find a suitable buzzer for the morse code, look for a model similar to the one supplied with your **Enigma-E** building kit (i.e. the one mounted next to the keyboard). This should be a buzzer with some built-in electronics, so that it generates a sound when a 5 Volt DC voltage is applied to it.

3.10 Using the serial port

Your **Enigma-E** is equiped with a serial port which greatly enhances the possibilities of your kit. First of all, the serial port can be configured to drive a buzzer, as described in the previous paragraph. Secondly, you may use it as a true RS232 serial port, by putting Jumper 2 in place. Please note that the morse capability is now disabled.

Once jumper ② is fitted, the serial port is activated, using the following specifications:

Baudrate	**9600 baud**
Data format	**8N1**
Handshaking	**none**

You may now connect a serial cable to the PCB, as described in the wiring diagram in paragraph 2.7 The other end of the serial cable may be connected to a another **Enigma-E** or directly to a PC.
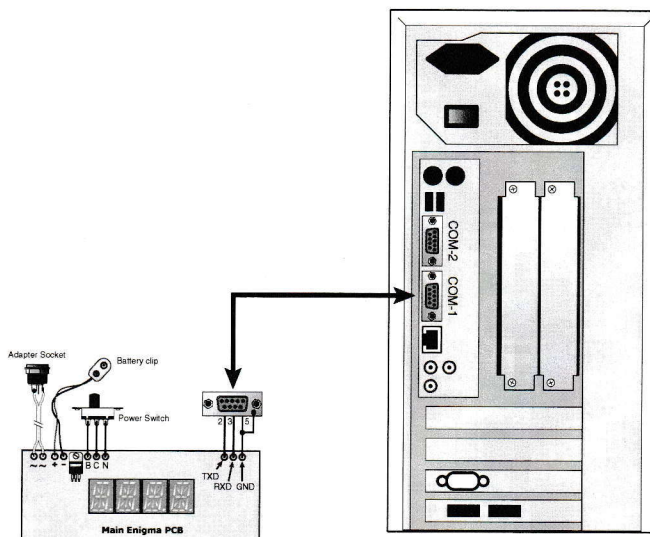
At the PC end, any standard terminal emulation program can be used, such as HyperTerminal for Windows. Any text typed on your **Enigma-E**, will appear enciphered on the PC and vice versa.

Users of a RISC OS computer, may use the software Enigma Simulator, available from our website, which has built-in serial port capability. Users of other platforms are advised to check our website for suitable software.