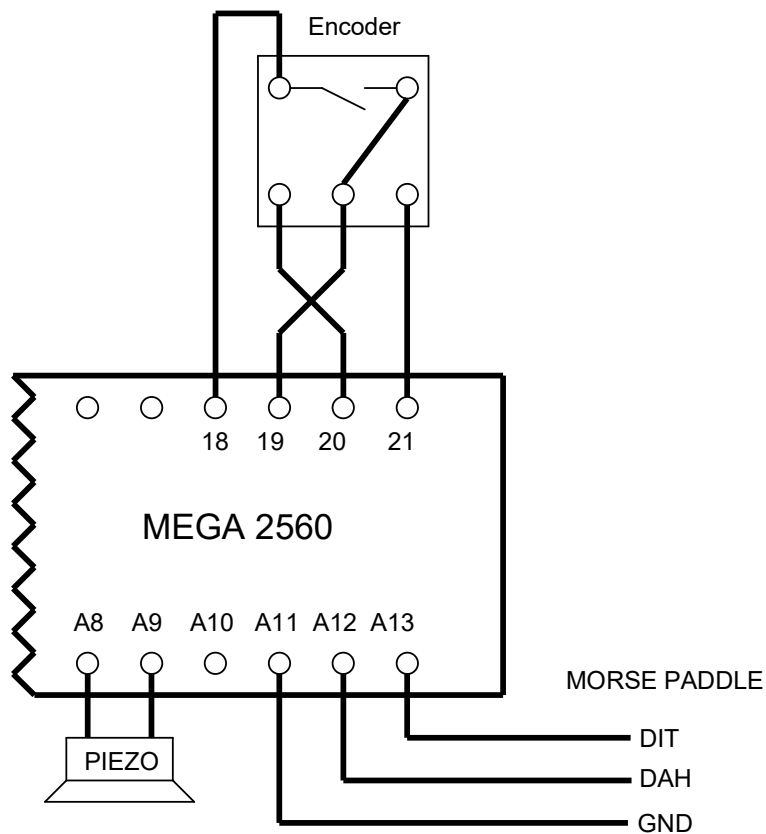


Morse Tutor Simplified Schematic

A 'port' of the W8BH 'Blue Pill' Morse Tutor to a Mega 2560
by Ken, KM4NFQ "Not Fully Qualified" 6 August 2019
modified by GM4CID to simplify assembly 14 August 2019

Hardware
Arduino Mega 2560
2.4 inch LCD Display Shield
Switched Rotary Encoder
Piezo Sounder



2.4 inch LCD Display Shield mounts directly on Mega 2560

Mega is 5v USB powered from a mobile phone power bank

Modification to SD library required, see next page

For the SD reader on the LCD shield to work with no hardware modifications the following two files in the SD library folder have to be changed as follows –

In the file \libraries\SD-master\ Sd2Card.h

```
#define USE_SPI_LIB change to      // #define USE_SPI_LIB  and  
#define MEGA_SOFT_SPI 0 change to  #define MEGA_SOFT_SPI 1
```

and in in the file \libraries\SD-master\ Sd2Card.cpp

```
#define USE_SPI_LIB change to      // #define USE_SPI_LIB  and
```

These changes allow the SD library to use the following pins which are standard for the Uno, Nano etc. –

MOSI - 11
MISO - 12
SCK - 13

CS is defined within the sketch (10)