BARSicle - the learn, code, build project

The BARScile project is a beginners learning, coding and building project of the Banbury Amateur Radio Society. It will cover,

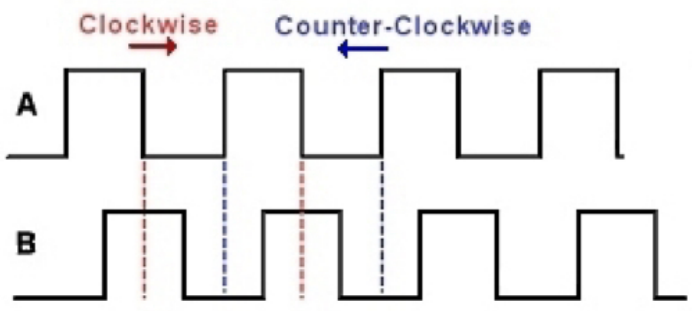
* the use of the Arduino Nano
* the build of a digital Signal Generator / VFO, an RF Volt/power meter, a Direct Conversion Receiver.

An extension of the project will cover an SSB Exciter, Power Amplifier with Low Pass Filter and an SWR/Antenna Tuning Unit

3. ARDUINO

Rotary Encoder

The Rotary Encoder produces 20 pulse outputs per revolution. It also has a push button switch on the shaft. It outs two codes. The rotary encoder is a notched wheel, with two contacts slightly placed apart touching it. This produces two outputs



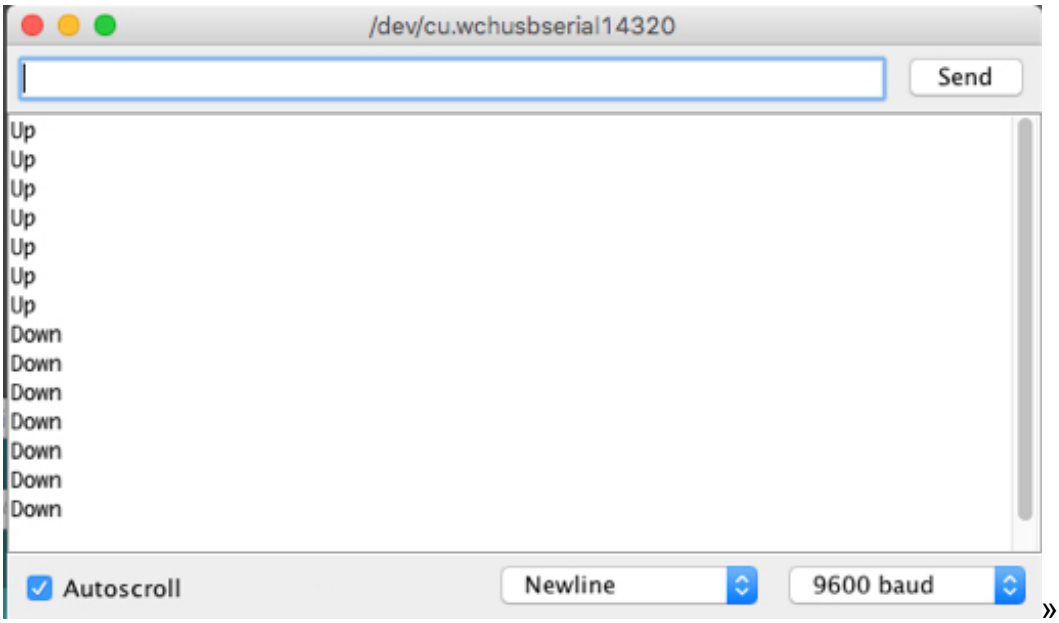
It is connected to three of the digital inputs of the Nano, D2 (CLK), 3 (DT) and 4 (SW). Using the library `Rotray.h` we can find the number of pulses and the direction of rotation.

Rotary has two modes of operation. One is to generate interrupts to the processor (D2 & 3 on the Nano can be used as interrupt inputs). When a interrupt occurs the processor stop immediately doing whatever it was doing and switches to a service routine, and then switches back. The other mode is polling, this checks the encoder once every time the code goes round the `loop( )`.

Since our `loop( )` function is quite small, just checking if the button has been pressed and the encoder has been turned, and thus it goes round fast, so the polling solution will give sufficiently fast response to the encoder rotation.

Try it out

Open and upload the File > Sketchbook > My_ENC. This reads the encoder rotation, and outputs a simple Up or Down on the Monitor window.



The rotary encoder library is included in the sketch

```
#include "Rotary.h"                 // include library

Rotary enc = Rotary(2, 3);          // create end object, pins 2 & 3
```

And then it can be read by this code

```
  result = enc.process();           // read the encoder
  if (result) {
    if (result == DIR_CW) {         // up
      Serial.println("Up");
    }
    if (result == DIR_CCW) {        // down
      Serial.println("Down");
    }
  }
```

The function `enc.process()` reads the encoder and returns a result of the direction CW or CCW.

Use your OLED

The OLED display can be used. Open and Upload `File > Sketchbook > My_ENC_OLED`.

This will display on the OLED