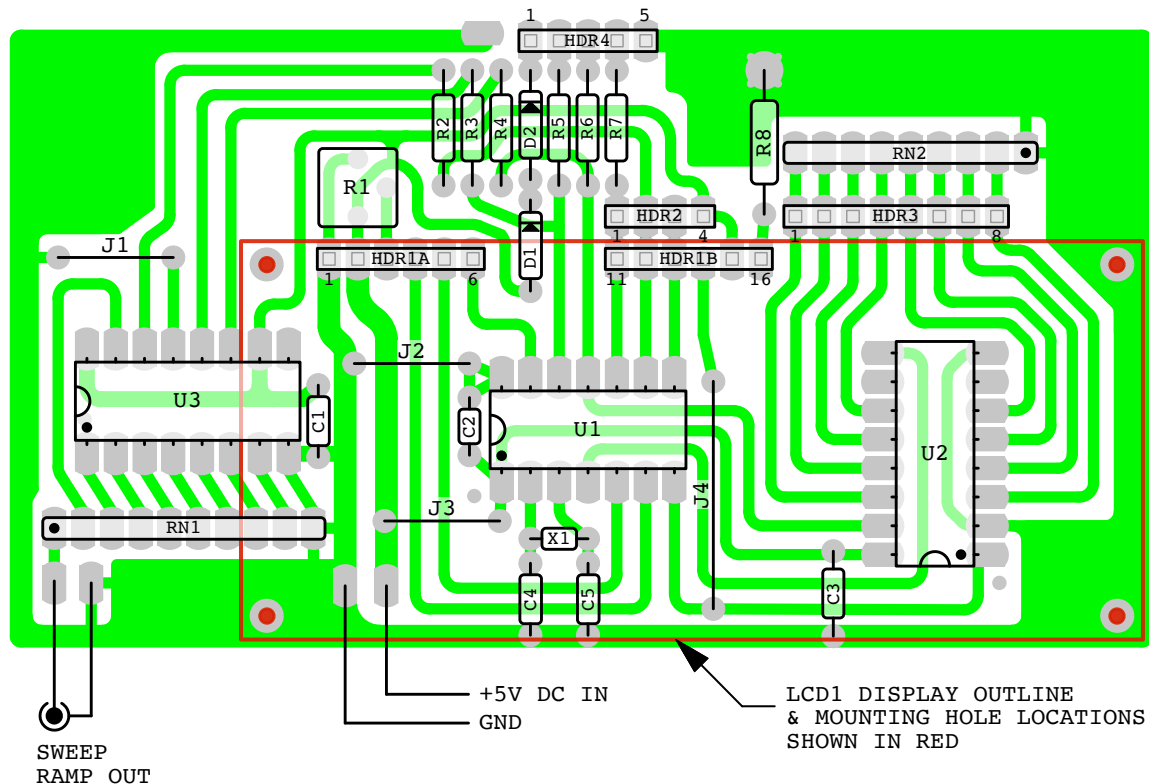


# DDS Controller Board

## Component Layout & Parts List



### Parts List

#### Resistors

R1, 5k Trimpot (LCD contrast control)  
 R2-R7, 2.2k 1/4 W  
 R8, 330 ohm 1/2 W

#### Resistor Networks

RN1, 10k/20k R-2R network, Bourns  
 4610X-R2R-103LF, dot indicates  
 output position  
 RN2, 8 x 10k resistor network,  
 dot indicates common position

#### Capacitors

C1-C3, 0.1  $\mu$ F  
 C4,C5, 22 pF (not used with 16F1703)

#### Resonator

X1, 20 MHz ceramic resonator,  
 Abracon HWZT-20.00MD or equal  
 (not used with 16F1703)

#### Integrated Circuits

U1, 16F630 or 16F1703 microcontroller  
 U2, 74HC165 par in, ser out shift reg  
 U3, 74HC595 ser in, par out shift reg

#### LCD Display

LCD1, 1602 16 char x 2 line LCD  
 display (HD44780 controller)

#### Jumpers

J1,J2,J3,J4

#### Note

For the 16F1703 version, C4, C5 & X1  
 are omitted. If the encoder option  
 is to be used, connect encoder  $\emptyset$ A &  $\emptyset$ B  
 signals to The X1 solder pads.

### Header Connections

#### HDR1A & HDR1B - LCD Display

1, Vss (GND)  
 2, Vdd (+5 VDC)  
 3, Vo (Contrast control voltage)  
 4, RS (Register Select)  
 5, RW (Read/Write)  
 6, E (Enable)  
 (7-10 Not used - Data 0,1,2,3)  
 11, Data 4  
 12, Data 5  
 13, Data 6  
 14, Data 7  
 15, A Backlight Anode (not req'd on some displays)  
 16, K Backlight Cathode (not req'd on some displays)

#### HDR2 - Keyboard Row Select

1, Keyboard Row 0  
 2, Keyboard Row 1  
 3, Keyboard Row 2  
 4, +Vcc supply to Rotary Sw. & Incr. Pushbuttons

#### HDR3 - Keyboard Columns, Pushbuttons, Rotary Sw.

1, Keyboard Column 3  
 2, Keyboard Column 2  
 3, Keyboard Column 1  
 4, Keyboard Column 0  
 5, Rotary Sw. D1  
 6, Rotary Sw. D2  
 7, -Incr Pushbutton  
 8, +Incr Pushbutton

#### HDR4 - DDS Signals

1, +Vcc  
 2, FQ\_UD (Data Latch)  
 3, W\_Clk (Data Clock)  
 4, Data  
 5, Gnd