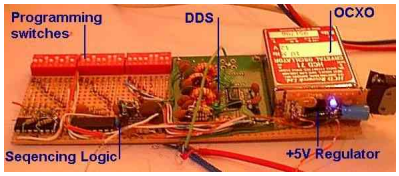


This DDS generator uses the AD9851, which is like an AD9850 but includes an internal 6x reference clock multiplier. I use it with a 10.000MHz OCXO, type HCD71.

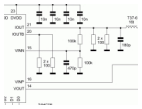
HCD71 datasheet
AD9851 datasheet

Thanks to Leon Heller for the DDS PCB, which made soldering the tiny AD9851 much easier. I did not fit the MMIC amplifier, or the 125MHz canned oscillator: the reference oscillator is the 10.000MHz OCXO. I also did not use surface mount components (apart from the AD9851) as the board was designed for. To add insult to injury I also wired up the AD9851's internal comparator such that I have both a CMOS-logic level squarewave output, and 50-ohm analog output. I used a 14MHz 7-pole low pass filter.

I did not use a microprocessor, PIC or whatever. Instead I connected 24 DIP switches to the 24 most significant programming bits of the 32 available. The least significant switch has a resolution of 3.6Hz. These are in banks of 8 bits, OR'ed using diodes, and sequenced into the AD9851 by a 74HC4017 counter IC. The 6'th 74HC4017 output toggles the AD9851 frequency load pin and resets the 74HC4017 ready for the next load. A 74HC04 functions as RC oscillator on about 8KHz, which clocks the 74HC4017. This produces about 1,300 frequency updates per second. Practically as soon as you change a DIP switch setting, the frequency updates. The third IC is a 74HC08 which is used to gate 4 external input bits onto the AD9851 frequency control, giving an externally controllable amount of shift on the 0.9, 1.8, 3.6 and 7.2Hz resolution bits.

{gallery}dds/circuit{/gallery} Here's the original handdrawn circuit diagram.

The OCXO has an adjustment, which allows about 280Hz range on the 10.000MHz output.



Here's a nice computer-drawn diagram for publication in the German CQDD magasine.

CLICK HERE for the diagram (Adobe PDF format).

{gallery}dds/calibration{/gallery} In the foreground of the picture to the right of the DDS board, is the 30m direct conversion receiver mixer to the HF Receiver

{gallery}dds/beacon{/gallery} Also shown on top of the polyphase receiver:
30m QRSS beacon
ATU / Power meter / Dummy load
1-valve (ECL82) CW transmitter for 80/40/30/20m
and on the left... my 5MHz Kenwood 'scope, displaying the 10MHz output signal somewhat attenuated

{gallery}dds/equip{/gallery} Here's a close-up of the DDS on top of the 30m beacon cobtroller, which is ope

{gallery}dds/ondds{/gallery}

DDS by Armand ON4TL

Johan ON5EX sent me this wonderful photo and said: "Armand ON4TL (in his eighties) has succeeded

Congratulations on a fine job, Armand!