

## DDS Unit

### Frequency Range

#### GENE:

B1: 4.000000 - 7.499990 MHz

B2: 7.500000 - 14.499990 MHz

#### Ham Band:

B1: 6.900000 - 7.499990 MHz

B2: 13.900000 - 14.499990 MHz

### Features

- 1) 5 tuning steps: 10 Hz, 100 Hz, 1 KHz, 100 KHz
- 2) 16 memories (8 in Gene band, 8 in Ham band )
- 3) Dual systems. Two systems, GENE and Ham Band are constructed in CPU. The default system is GENE, covering 4MHz – 14.5 MHz.
- 4) IF calibration. This preset function compensates the offset of the BFO to meet the requirement of the center frequency ( $f_c$ ) of the homebrew crystal filter. The preset range is 0 - 12.999990 MHz. The default IF is 9 MHz. 5 tuning steps are available.
- 5) USB and CW mode frequency offset compensation. In USB mode, output frequency increases 3 KHz automatically so that the LCD displays the actual receiving and transmitting frequency; in CW mode the output frequency increases 1 KHz automatically.

### Definition of the connectors

KEY is the key pad interface. The pins are B+, B-, F+, F-, STEP, MEM+, MEM-, and MODE.

- 1) **Band selection** Press B+ or B- to select the band;
- 2) **Mode selection** Press Mode to select the mode;
- 3) **Step selection** Press STEP to select the step (10 Hz, 100 Hz, 1 KHz, 10KHz, 100 KHz);
- 4) **Frequency tuning** Press F+ or F- to tune the frequency. When F+ or F- is held longer than 1 second, tuning functions continuously;
- 5) **Memory** Press MEM+ or MEM- to select the stored frequencies. Each system (GENE and Ham Band) has 8 memories. Frequencies are stored automatically when you switch off the power;
- 6) **Frequency Calibration** Press B+ and B- simultaneously to enter the calibration mode. "0" indicates the IF is at 9 MHz, the default frequency. In this mode the band is always at Band 1.

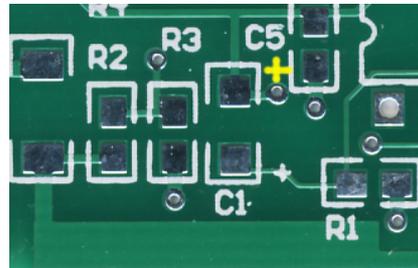
Press F+ or F-, the IF frequency is calibrated. For example:

The filter crystals used in this kit are 9.000, MHz. However the center frequency is around 8.9995 MHz when they are used to construct the filter. As a result, at LSB mode the BFO frequency should be 8.9980, 2 KHz off 9.000 MHz. With Frequency Calibration, this 2 KHz offset can be compensated. Press F- to subtract this 2 KHz. Press MEM+ to save the calibration and leave.

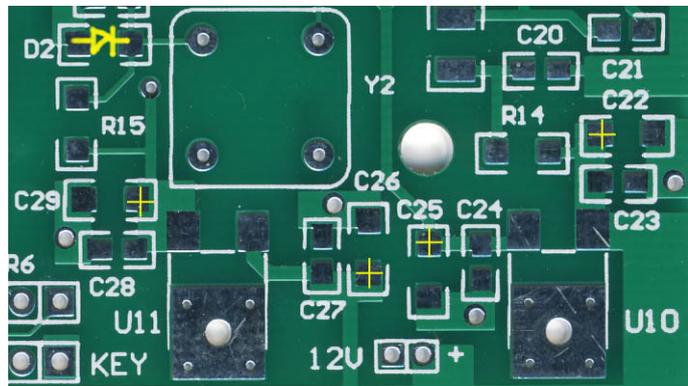
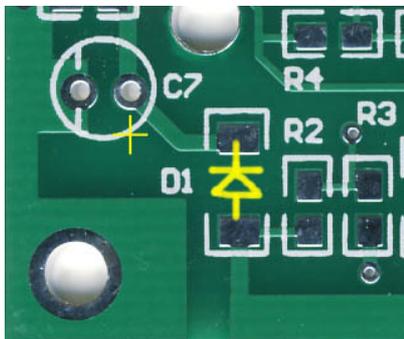
- 7) **Dual System Conversion:** Press F+ and F-, GENE is converted to HAM band, covering 40m, and 20m.

### Construction

1. Fit the SMD components around U1 FIRST. If the socket of U1 is fit first, it might be very difficult to fit the SMD components.
2. The positive polar of C1 should be as the photo indicates: the yellow "+". The strip on the TAN electro cap indicates "+".



3. Other electro caps and diodes are fit as the photo below:



4. VR1 is contrast control. Set to suitable contrast level. If there is no display when construction is finished and apply 12V power, check this VR1.
5. There are no adjustable components in this unit. If wired correctly, this unit works.

- LCD and the key pad constitute the LCD assembly: The key pad is fixed to the LCD by two screws and brasses. Fix 4 brasses to the LCD. The LCD assembly is fixed to the front panel of the 300S case. In fact one 7 buttons are used. MEM- is omitted.



- The button has two pairs of switches. 1 pair of on-state switches and 1 pair of off-state switches. Pay attention to the slots of the buttons. The buttons should be fixed as the photos indicate. Or use an ohm meter to find the off-state pair switches, i.e., when the button is pressed, the switches are on. Use this pair as the key.



- Place the 7 buttons, but do not solder them yet. Fix the LCD assembly to the front panel, and adjust the positions of the buttons so that the clearance around the buttons is even and the buttons are free to be pressed down and released. Now solder the buttons.
- DDS board should be fixed to the bottom of the case below the front part of the main board. Use wires to connect the LCD pin holes to the related pin holes on the DDS board.



10. The key pad has only 7 pin holes: B+, B-, F+, F-, STEP, MEM, MODE, and GND. Connect them to the related pin holes on the DDS board as shown.

