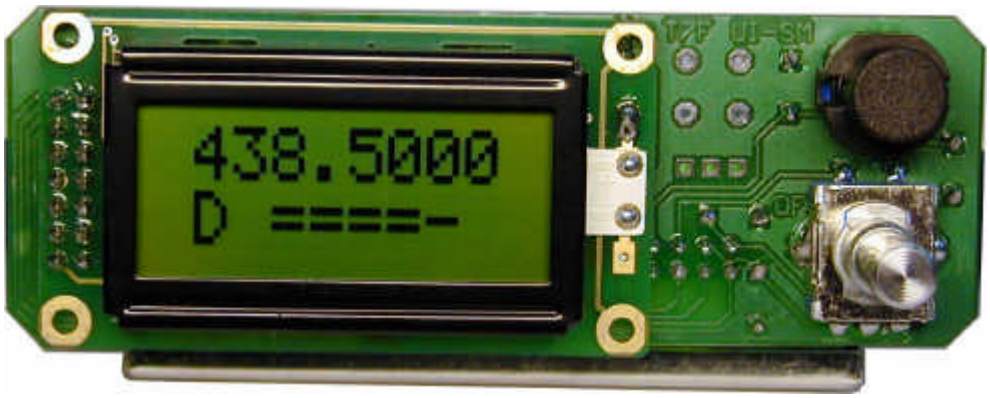
Manual for the
LCD User Interface
for the T7F



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Circuit description

Fig. 1 shows the schematic diagram. The module includes a two-line LC-display and a rotary resolver with integrated push button switch. Depending on the rotation direction the microcontroller on the T7F board translates the pulses from the resolver into frequency up or down information. The mode (duplex, simplex, reverse) is selected with the push button. The key S2 provides fast tuning with 500kHz steps. Beside status information the lower line of the LCD shows a 12-step S-meter bar.

Construction

Even the PCB has traces only on one side components are mounted from front and rear side. Therefore you can see two place plans fig. 2 (component side) and fig. 3 (solder side). At first mount all components from fig. 2. Then stuck pin header X102 from the component side through the holes so that the plastic part remains on the component side and solder it. Next mount the resolver on the solder side and push button S2. The latter must be mounted with a 4mm gap to the PCB so that it is on one plane with the other front elements. In addition it is the only way to reach the solder pads.

After soldering the component side check the solder pads carefully with a magnifier for shorts. Once the LCD is mounted you cannot reach this side any more.

On the rear side of the LCD you find two small pads which must be connected together before you mount the display (fig. 4). Pad P1 supplies the back light. Solder a short pieces of wire here. Finally put the LCD on the pins of X102 and the P1 wire and solder it from the top of the LCD module. The holes are plated trough, so soldering is no problem. Check that the the metal clip of the LCD does not touch one pad of R4. Bend the clip a little bit in case.

The assembled unit shall be attached on the two pin heads X1 and X2 of the T7F. Since you cannot access the modem connector X1 of the transceiver any more all it's pins are leaded through the board one-to-one to X104. Pin 1 is on the left of the lower row.

Before you can use the device you must exchange the PIC (IC1) of the T7F with the new chip that is enclosed with the kit.

With the resistor R7 you adjust the S-meter full scale display. Select any frequency and attach an antenna to the T7F. Apply a strong signal and turn R7 until the all bars on the display are on. If you remove the signal no or only the fisrt bar must be left.

Operation

If you turn the knob to the right the frequency counts up, to the left it counts down. The channel spacing is 12.5 or 25kHz. The upper line shoes the current frequency on the lower line you see the mode.

There are three modes, simplex, duplex and reverse which can be changed by pressing on the knob. Each time you press it proceeds cyclic to the next position. In simplex mode RX and TX frequencies are the same, duplex means that the TX frequency has a negative offset from the TX. In reverse mode the TX offset is positive. A 4^{th} position is used to select the frequency offset from 0 to 9.9875MHz in 12.5kHz steps. The 5^{th} position lets you choose the channel spacing. Please notice that with 12,5kHz spacing the transmit delay is 30ms instead of 15 with 25kHz.

All settings are saved when switching off the transceiver. If you press the tuning knob during power up all parameters are set to the initial state.

The S-meter bar has 12 positions. The first symbol appears with 0.1µV input voltage. Each step indicates 5dB more level. So if all bars are on you have at least 100µV at the antenna.

Technical support

For help on building up or operation please send an e-mail by internet (df2fq@amsat.org) or packet radio (df2fq@db0pv.#bay.deu.eu).

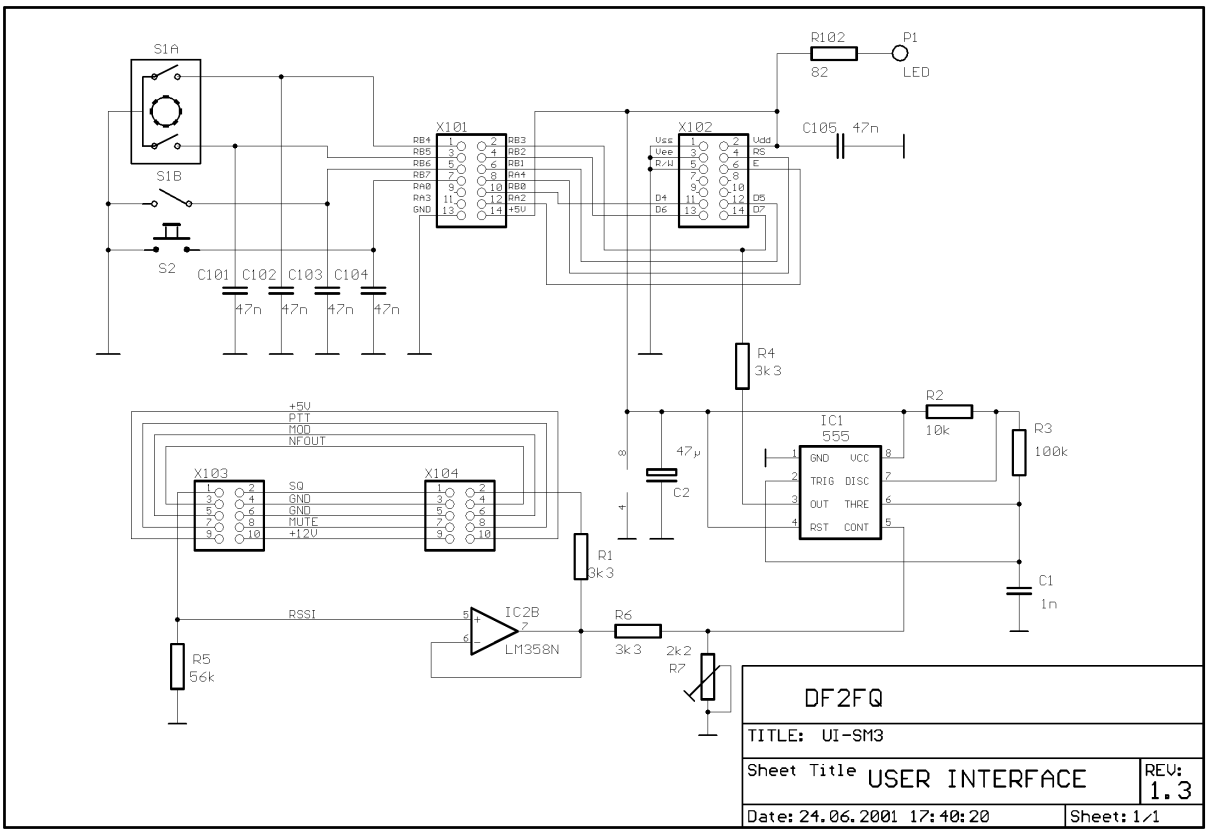


Fig 1. Schematic diagram

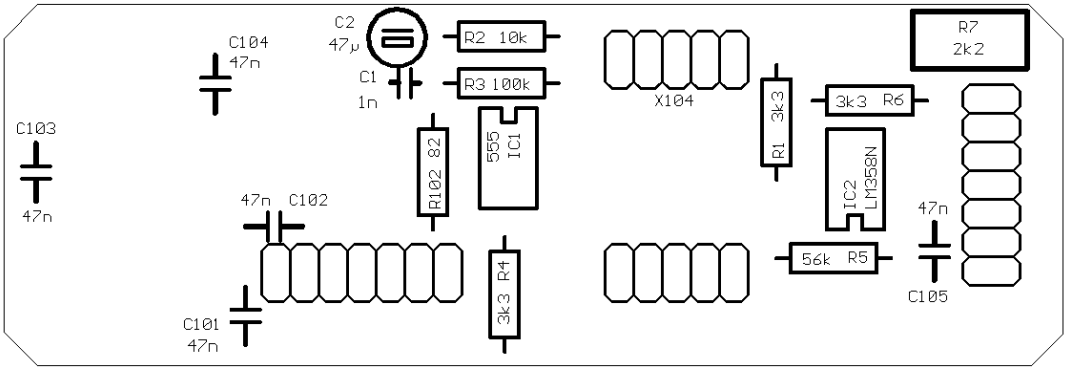


Fig. 2, Place plan component side

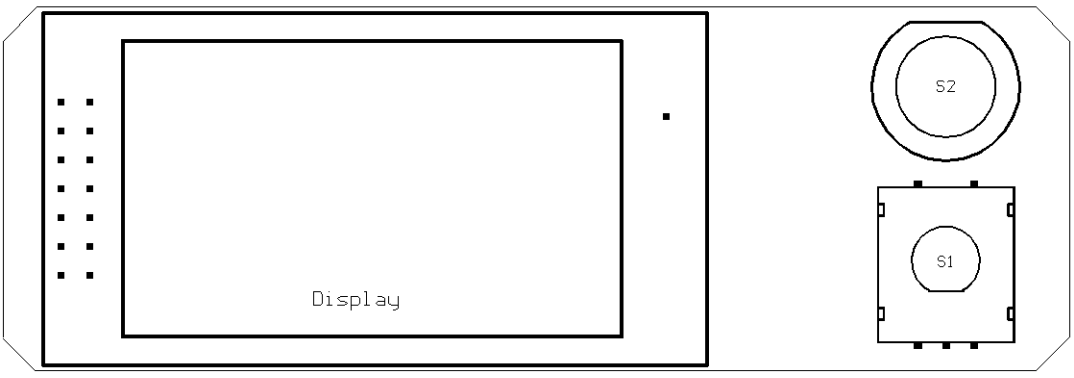
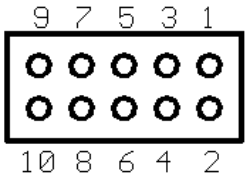


Fig. 3, Place plan solder side

1: do not connect
2: +5V
3: DCD-output
4: PTT
5: ground
6: modulation input
7: ground
8: AF-output
9: reserved
10: reserved



Pin layout X104

view onto the pins

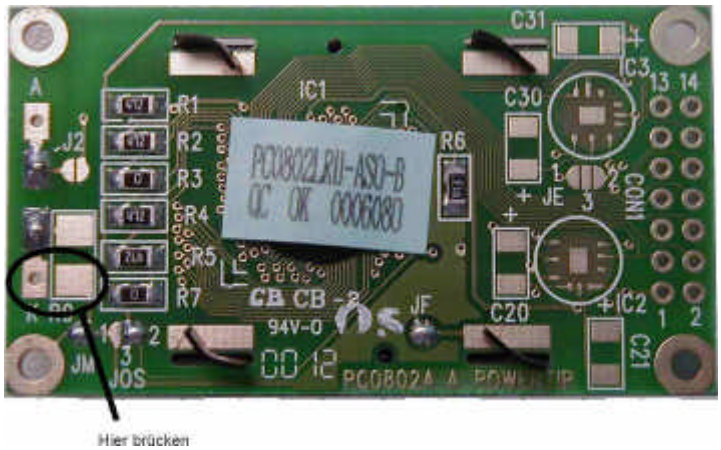


Fig. 4, make short here