

The **Real Time Clock Calendar** (RTCC) feature enables the USB card to maintain the current date/time for the NUE-PSK Digital Modem. The modem communicates with the RTCC controller to get the calendar information and then displays the date and time on the main LCD. Additionally, the modem software "time stamps" each QSO file recorded onto the USB drive plugged into the USB. The date is initially set with the CTL-D keyboard command, and the initial time is set with the ALT-D command.

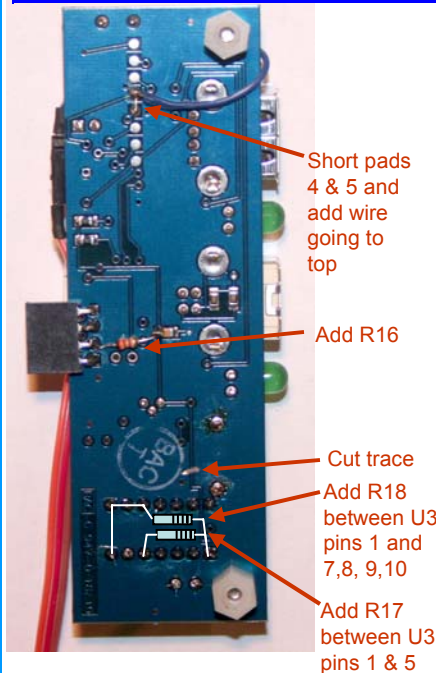
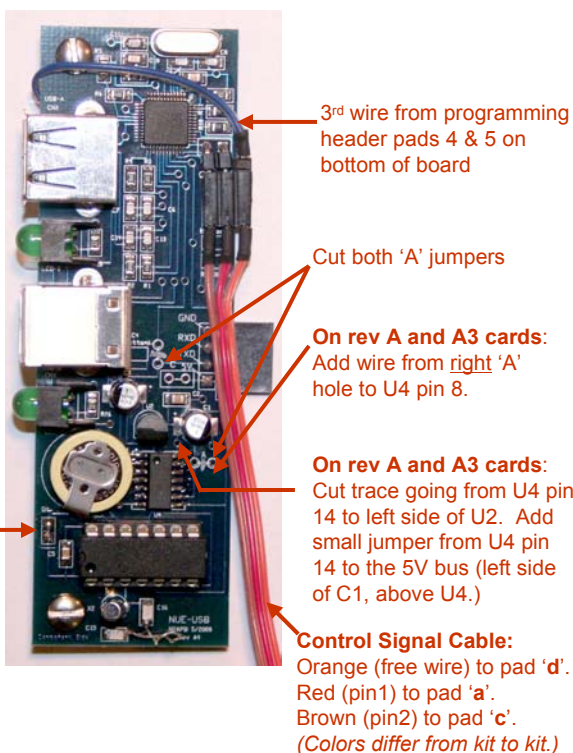
The starting point for use of these RTCC components is an assembled rev A, A3 or A4 USB card. We describe how to add the parts and modify the board for RTCC usage. Full backward compatibility is maintained ... everything that worked before will still work after you've upgraded to the RTCC.

→ See full details online at <http://www.nue-psk/usb>

Parts List:

U4	1	CMOS switch, FST3126
U3	1	PIC16F688, DIP-14
J3	1	IC socket, 14-pin DIP
J4	1	SIP socket, 1x5
X1	1	Crystal, 32.768 kHz, cylinder
C5	1	Capacitor, SMD, 0805, 0.1 uF
C15, C16	2	Capacitor, SMD, 0805, 22 pF
R16	1	Resistor, 1K, 1/8W axial lead
R17	1	Resistor, 22K, 1/8W axial lead
R18	1	Resistor, 22K, 1/8W axial lead
BATT	1	Battery, 3V

Add jumper across D1 pads. (D1 pads only present on rev A3 & A4 boards.)



Assembly Instructions

- 1) Attach U4. Use care to ensure it is carefully aligned. Use desolder braid (supplied) to remove excess solder between pins, if needed.
- 2) Attach all parts from the SMT card.
- 3) Attach crystal X2 slightly elevated such that the leads and body touch no other parts.
- 4) Attach all remaining parts.
- 5) J4 is used as a socket for the battery. Snip off the inner three pins, leaving the outer two, and solder it in place at the battery position.
- 6) Place a shorting wire across the pads of D1, if your board has a D1, located to the lower left of the battery.
- 7) Cut the traces that connect the two sets of 'A' jumpers to the left of P1 and below P1.
- 8) Cut the trace on the bottom of the board that brings 5V to U3 pin 1.
- 9) Add pull-up resistor R16 to the TxD pin of P1 on the bottom side of the board. Solder the other end of the resistor to the 3.3V bus located on the closer edge of C4 (may also be called C10) on the bottom side. (NOTE: If your board already has one or two pull-ups on this connector, remove the one on the RxD pin of P1, leaving just the one as shown on the left. R16 may be any value between 1K and 4.7K.)
- 10) Add pull-up resistor R17 between U3 pins 1 and 5 on the bottom side of the board.
- 11) Add pull-up resistor R18 from U3 pin 1 to U3 pins 7, 8, 9 and 10.
- 12) If not done already, create the 3-wire control cable with ribbon cable and J2. Solder one end of cable to J2. On modem board, remove screws and lift up LCD. Solder three wires on other end of cable to points 'a', 'c' and 'd' on the modem board at lower left area of U1 (See photo 1.) This cable will plug into P3 when USB board is plugged in. The wire coming from P3 pin 1 (closer to the board edge, red wire in photo) goes to pad 'a' on the modem board. The wire from P3 pin 2 (inner pin, brown wire in photo) goes to modem pad 'c'. If not present already, connect a wire from pads 4 & 5 on the programming pads/pinheader on the bottom side of the board up to the top side (blue wire in photo) and slide into the third position of J2, which in turn connects to modem pad 'd'.
- 13) Insert the programmed PIC controller U3 into the IC socket.
- 14) Battery preparation & insertion: With needle nose pliers, twist each lead 90-degrees so the flats of the leads are in-line with each other. Orient the battery with the top tab (positive) in the hole closer to U3 and insert the battery. The battery should measure between 2.7V and 3.1V. Using a clip lead, quickly short U3 pin 4 to ground to reset the PIC.
- 15) Plug the USB+RTCC card into the modem connector and connect the 3-wire control cable.
- 16) Power up the modem and see the default date (7/4/76) displayed at the upper left of the LCD and the default time in the upper right. Set with the CTL-D and ALT-D commands, respectively. CTL-Z terminates the data entry.

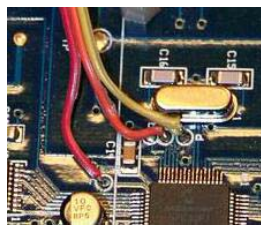


Photo 1: Control Cable
(See Assy step 11)

