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PIEXX UX-14(PX) Plus Installation Instructions

1. Remove the rectangular cover plate located on the back of your IC-751 / IC-751A transceiver just below the 24 pin Molex connector. Save the 2 mounting screws, you will use these to mount the new connector plate.
2. Remove the bottom cover of your transceiver.
3. Route the 4-pin cable supplied on the connector plate through the rear access cover and into the electronics compartment of your transceiver.
4. Mount the connector plate with the orientation as shown in figures 1 and 2. Use the two screws that were securing the original access cover to secure the new connector plate.



Figure 1.

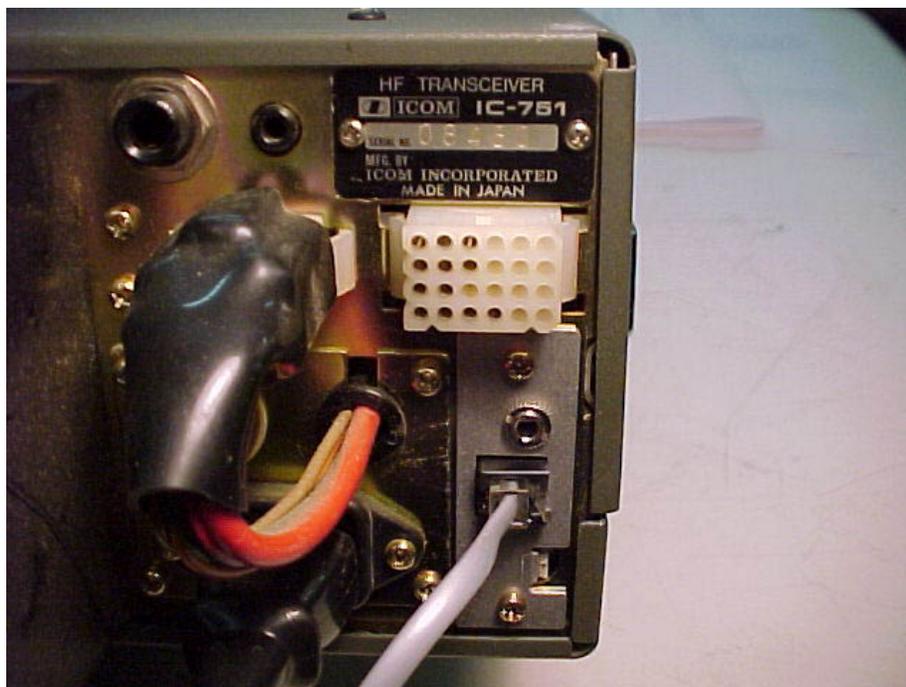


Figure 2.

5. Preset the dipswitches as shown in figure 3. This is the default setting and sets the CI-V and RS-232 port rates to 9600 baud, the transceiver mode off, smart band switching on and the radio address to 1C. Notice in the picture that the black highlight line shows the position of the switch trigger.

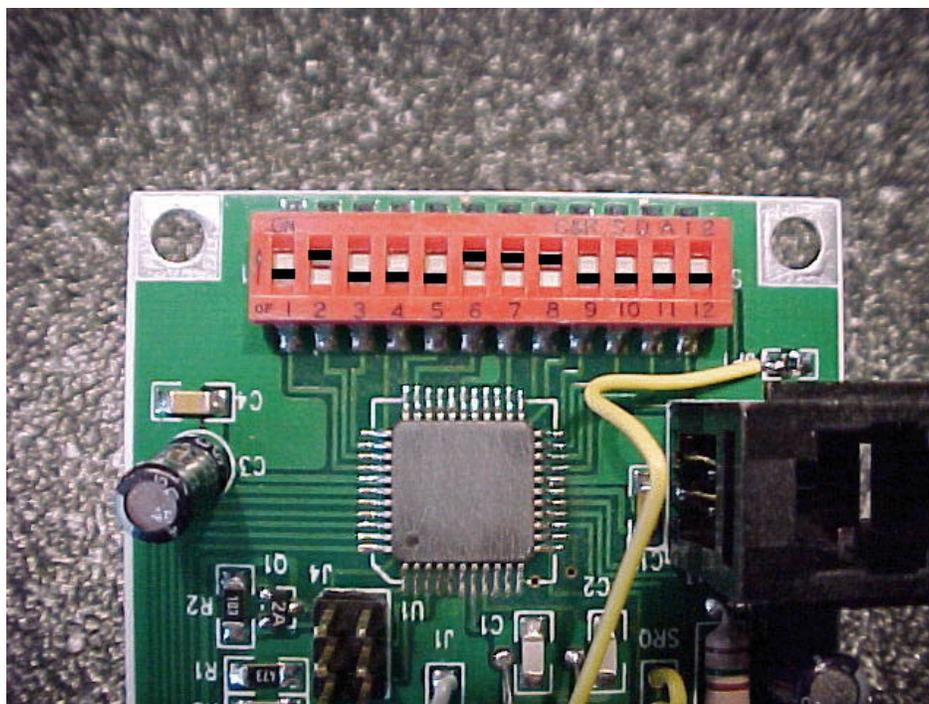


Figure 3.

6. Install the 4 supplied standoffs as indicated in figure 4. Be careful not to over tighten the hardware!

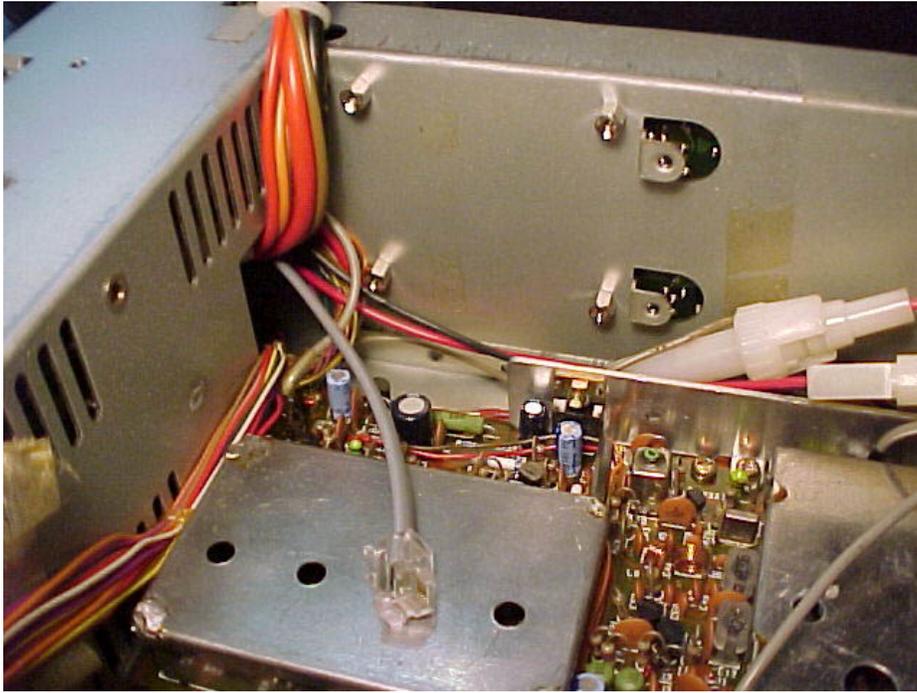


Figure 4.

7. Mount the UX-14PX board as shown in figure 5. Use the 4 supplied 4-40 3/16 pan head screws to secure the board to the standoffs.

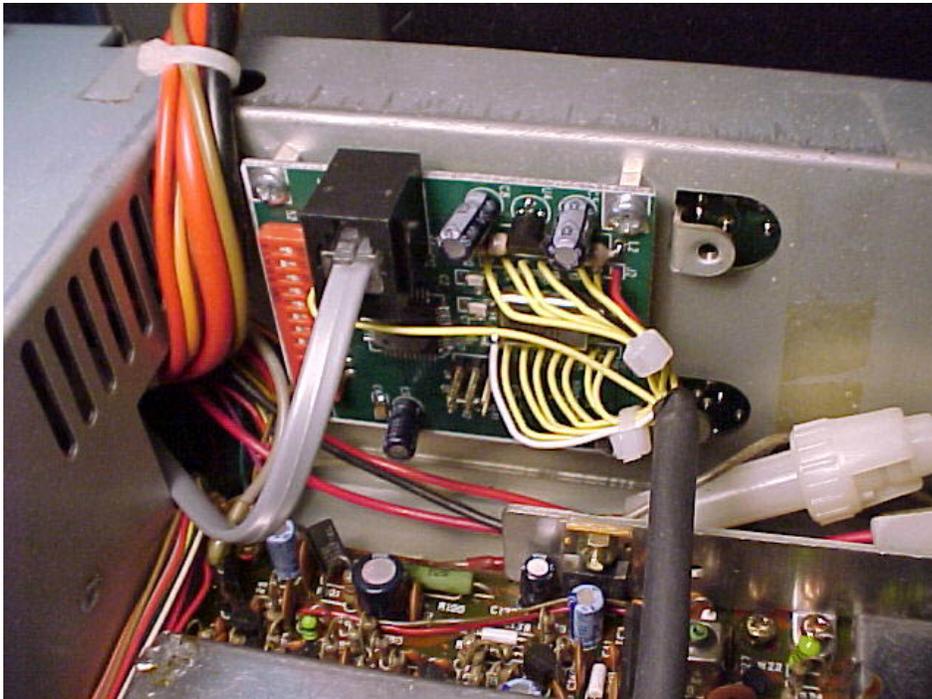


Figure 5.

Plug the modular 4 pin plug, coming from the connector plate board, into its mating socket, J3, on the UX-14PX board.

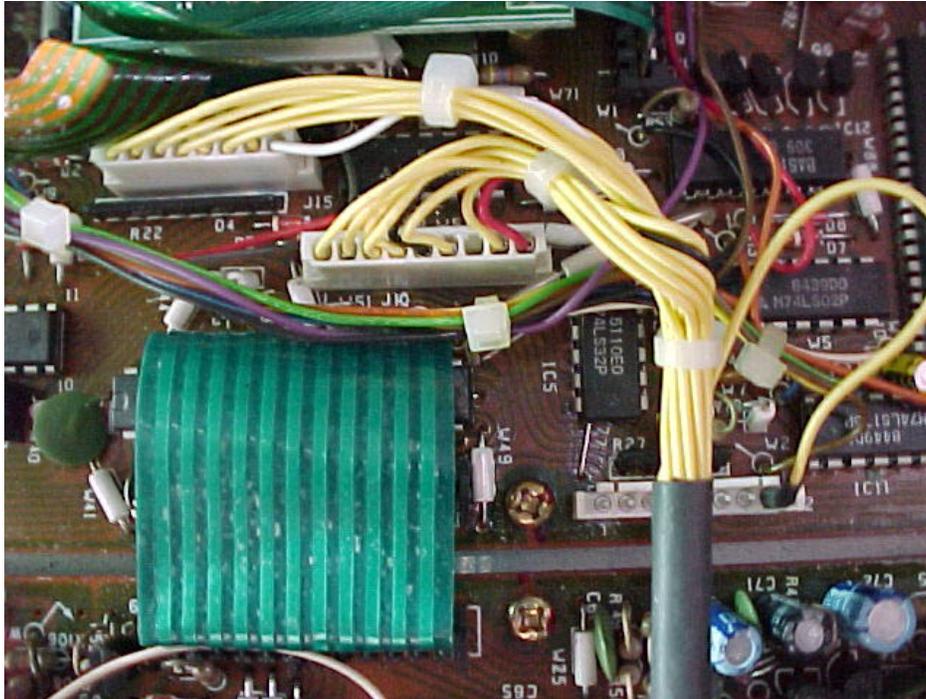


Figure 6.

8. Install the 2 connector on the UX-14PX wiring harness into their mating sockets, J15 and J10, on the IC-751(A) digital board. Even though these connectors are keyed, you should examine figure 6 to determine their correct orientation noticing the different colored wires and their relative positions.

9. After examining figure 5, install the single wire connector on to the right most pin pin 8, of connector J12. This is the signal lead that picks off the status of the SPEECH button. If you have a voice synthesizer installed in your radio, connector J12 will be populated and you won't be able to install this signal lead. Without the SPEECH button connected, the system will still work but you won't have the 6-channel memory stack functionality.

10. Reinstall the bottom cover of your transceiver.

11. Install the gray serial connector cable between your computers RS-232 port and the modular 4-pin jack on the newly installed connector plate on the back of your transceiver. You may also use the CI-V mini-jack connector to daisy chain multiple radios to your computer using the level translation circuitry built into the UX-14PX. Communications can occur on both ports simultaneously.

UX-14PX Dip Switch Settings

Switch #	Function
1	Com rate for the CI-V (Mini jack) port. On = 1200, Off = 9600. Only the communications rate for the CI-V port is effected by this switch.
2	Smart Band Switch mode. If this switch is ON, the auto detection of band changes will be detected and modified with the new band start info provided by the UX-14PX. If this switch is OFF, the band switching will be in the original Icom format.
3	Transceiver mode. If this switch is on, the UX-14PX will automatically send and receive CI-V commands 0 and 1 (frequency and mode changes) in response to frequency and mode changes on the transceiver. If this switch is off, automatic update of frequency and mode change data will not be acted on. This mode is usually best left off.
4	Send receive 4 byte frequency data. If this switch is OFF, the frequency data field will be 5 bytes long, if ON, only 4 bytes of frequency data will be communicated. The 4 byte (switch ON) mode is used to support interface with older Icom radios such as the IC-735. This switch should normally be set in the off position.
5	MSB of radio address. Switches 5-10 set the 6 bit address of the radio. This address is set in a binary code. The setting of switches 5-10 for the normal address of an IC-751 transceiver, address 1C is as follows: 5-OFF 6-ON 7-ON 8-ON 9-OFF 10-OFF
10	LSB of radio address.
11	RS-232 Echo- When this switch is OFF data received on the RS-232 port will be echoed back to the RS-232 transmitter. This emulates the Half Duplex nature of the original CI-V port and is required by some programs.
12	Com port rate for RS-232 port. Off = 9600, On = 4800 baud. The other port parameters are: no parity, 8 data bits and 1 stop bit.

UX-14PX Operational Notes

The communications parameters for the RS-232 port is fixed at, no parity, 8 data bits and 1 stop bit. The RS-232 port rate can be set for 9600 or 4800 baud .The CI-V port rate, however, can be set for either 1200 or 9600 baud.

The Radio Address instructs the UX-14PX whether it is installed in a HF or VHF radio- You must use addresses 20H-27H for VHF radios (IC-271). All other addresses are assumed to be HF radios.

Setting the power up band start locations- If the Smart Band mode is selected, by Dip Switch 2 being placed in the ON position, you will need to set the power up initial band change frequency for each band in both the CW and SSB mode. To set the power up band start frequency:

1. Select either the CW or SSB mode.
2. Change the frequency to a valid ham band frequency.
3. Press the function key followed by the RTTY key, that is, select the narrow RTTY mode.
4. Press the RTTY mode key again, that is select normal RTTY.
5. Press the function key followed by the RTTY key, that is, re-select the narrow RTTY mode.

If you have performed these steps exactly as indicated, the mode and frequency will revert to that selected after step 2 in the procedure, the radio will no longer be in the RTTY mode. At this time the band start for the band and mode you are currently on will be established.

Smart Band Start operation- When you have Smart Band enabled, the UX-14PX will monitor the transceivers frequency and mode and try to determine whether you have changed bands. If a band change has been detected, the UX-14PX will save the last frequency you were on, just prior to the band change taking place, so that it can return to this frequency the next time you go back to that band. If you haven't been on the new band, since power up of the transceiver, the starting frequency on the band will be as set up in the previous procedure labeled **Setting the power up band start locations**. If you have been on the new band previously, you will be returned to the frequency that you were on when you left the band. If you change bands, or modes, the band frequency saving feature is locked out until you tune the radio a bit. This lockout feature was instituted to stop the inadvertent saving of the return band frequency when you are slewing through many bands or are changing modes. For example if you change to a band in the SSB mode, and then press the CW mode button, the radio will shift to the last CW band frequency for the newly entered band. However, if

you change bands, in the SSB mode, move the frequency dial a bit and then press the CW mode key, the radio will switch to the slight offset frequency called by the IC-751 processor without the UX-14PX interfering. These last comments are a bit hard to describe but are quite intuitive in operation, after a bit of experimentation.

Memory Stack operation- The UX-14PX institutes a 6 channel circular memory stack which is advanced by pressing the SPEECH key on the IC-751(A)s front panel. This memory is volatile, that is, its contents are not retained through a power down cycle. Each time you press the SPEECH button, the current frequency and mode is saved and the next memory in the stack is retrieved. Repeated presses of the SPEECH button will continuously cycle you through the 6 memory channels. At initial power up of the radio, and until each of the memory locations has been saved, actuation of the SPEECH button will cause the current radio information to be saved, but since the subsequent channel has yet to be saved, no channel information will be retrieved. This condition, of course, will be corrected after 6 presses of the SPEECH button.

UX-14PX Rev. B Enhancements- The Revision B UX-14PX board has 2 new features:

1. S-Meter read function. The S-Meter can be read via command 15h, sub command 02. The command format is as follows:

```
FE FE 1C E0 15 02 FD
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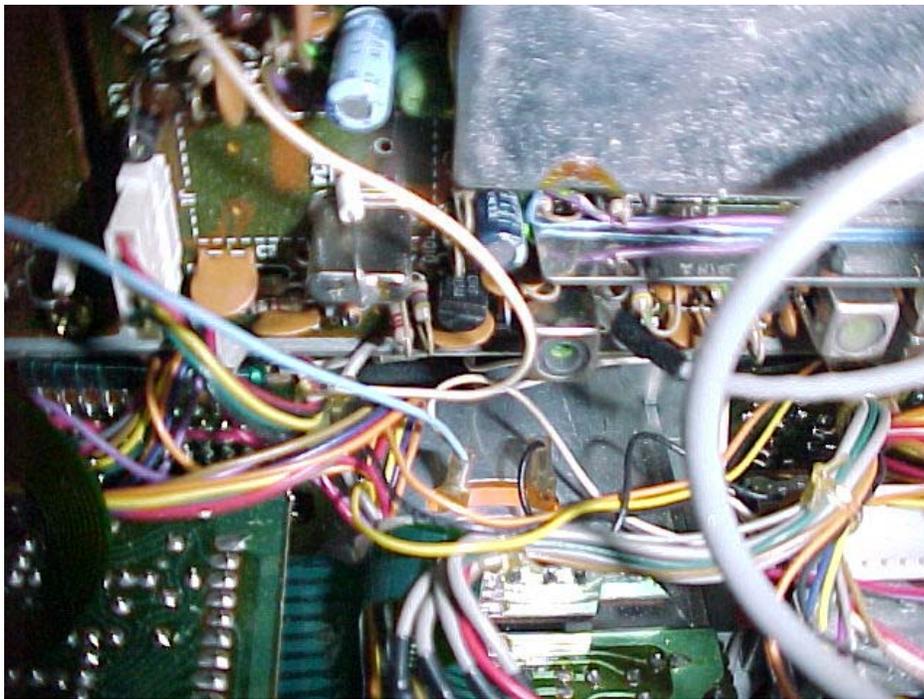
The response to this command will be 2 BCD digits indicating the current meter reading. The BCD values will be between 0000 and 0255. An example response format for a mid scale meter reading of 128 is:

```
FE FE E0 1C 15 02 28 01 FD
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The blue wire in the UX-14PX wire harness needs to be connected to the white (positive) meter lead for the S-Meter function to operate correctly.

A freeware version of an S-Meter display program is available at:

www.seed-solutions.com/gregordy/Software/SMeterLite.htm



Blue S-Meter lead from the UX-14PX harness connected to the White lead on the S-Meter

2. PTT function. The UX-14PX has an auxiliary open collector output that may be used to actuate the transceivers PTT via the 1c command, sub command 0. There are 2 forms of the PTT command, one sets a PTT timeout timer the other just sets the PTT line, as follows:

FE FE 1C E0 1C 00 0x FD where x = 1 for PTT on, all else = PTT off.

This command will set / clear the PTT line. The timeout time will be the last set, or 180 seconds if the timeout time has never been set.

FE FE 1C E0 1C 00 0x LL HH FD

Where x = 1 for PTT on, all else = PTT off. LL = Least significant BCD digits of the timeout timer, HH is the most significant BCD digits of the timeout timer.

This command will set / clear the PTT line as well as set the timeout timer value. For example the command:

FE FE 1C E0 1C 00 01 60 00 FD

Will activate the PTT line and set the timeout timer for 60 seconds.

Valid timeout timer times are 3 to 3600 seconds. Both forms of the PTT command will respond with ACK, if the command is accepted, otherwise a NACK will be returned.

To utilize the PTT function, you must connect a lead from the PTT pad on the UX-14PX board to your rigs PTT circuit.

The UX-14PX can be installed in the IC-271A 2-Meter

Transceiver- Review the following pictures for installation in the IC-271. The UX-14PX board recognizes that it is in a VHF radio by noticing that the radio address is in the range of 20H to 27H. If you are going to use the UX-14PX in a VHF radio you must set the dip switches to an address between 20H and 27H.

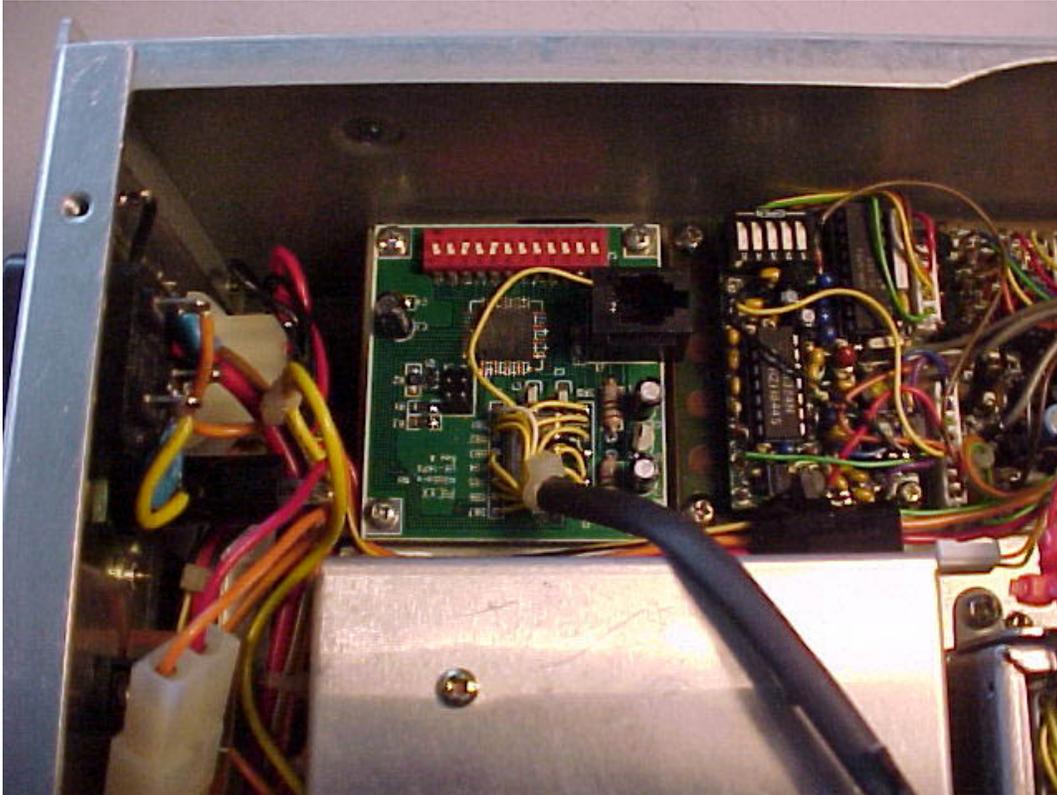


Figure 7.

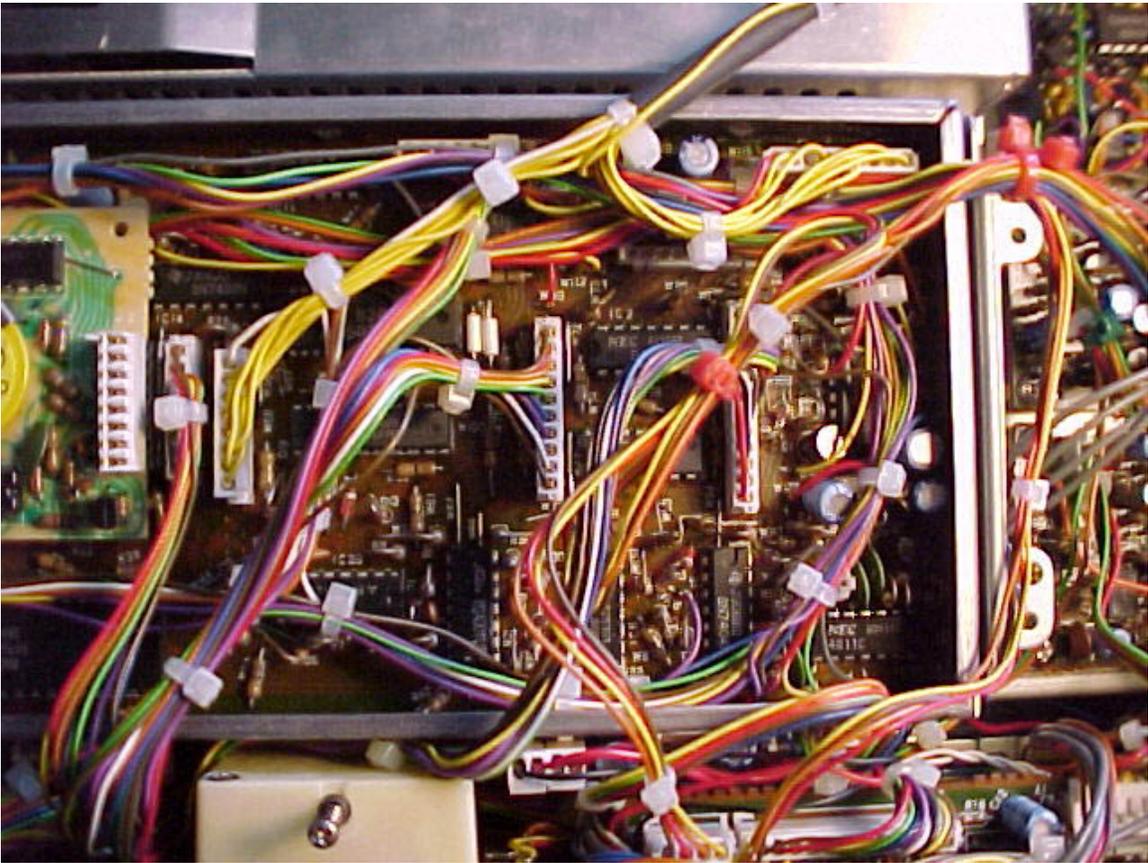


Figure 8.

Notice in figure 8. the locations of the two connectors on the IC-271s digital board that mate with the UX-14PX cables

The standard dipswitch setting for a IC-271, set at radio address 20H would be switches 3 and 5 on, all other switches off.

The standard dipswitch setting for a IC-471, set at radio address 22H would be switches 3, 5 and 9 on, all other switches off.

The UX-14PX can be installed in the IC-1271A Transceiver-
Review the following pictures for installation in the IC-1271. The UX-14PX board recognizes that it is in a UHF radio by noticing that the radio address is in the range of 24H to 25H. If you are going to use the UX-14PX in a UHF radio you must set the dip switches to an address between 24H and 25H. Usually a IC-1271 transceiver will be located at address 24H
The standard dipswitch setting for a IC-1271, set at radio address 24H would be switches 3, 5 and 8 on, all other switches off.

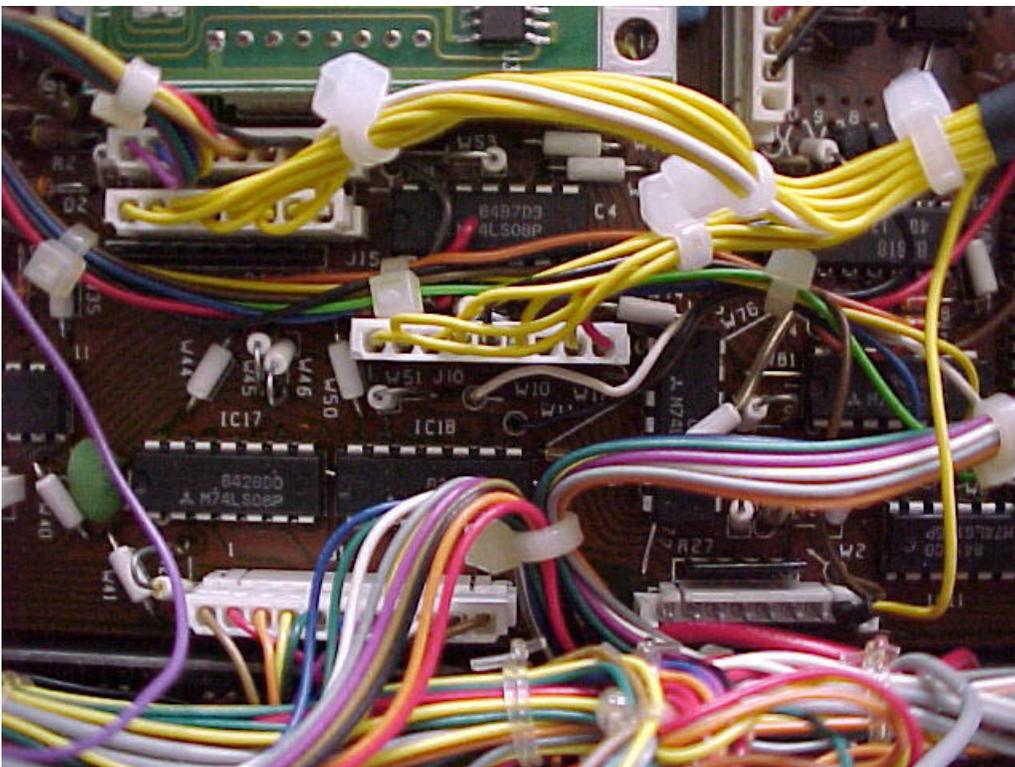


The easiest place to connect the S-Meter wire on the IC-1271 is where the lead attaches to the Main Unit board on the top of the radio. Find the 3-pin connector J5 located at the left rear of the radio. The center lead on this connector, a red lead, is the S-Meter signal. Strip back this wire and attach the Blue S-Meter lead coming from the UX-14px together with it. In the

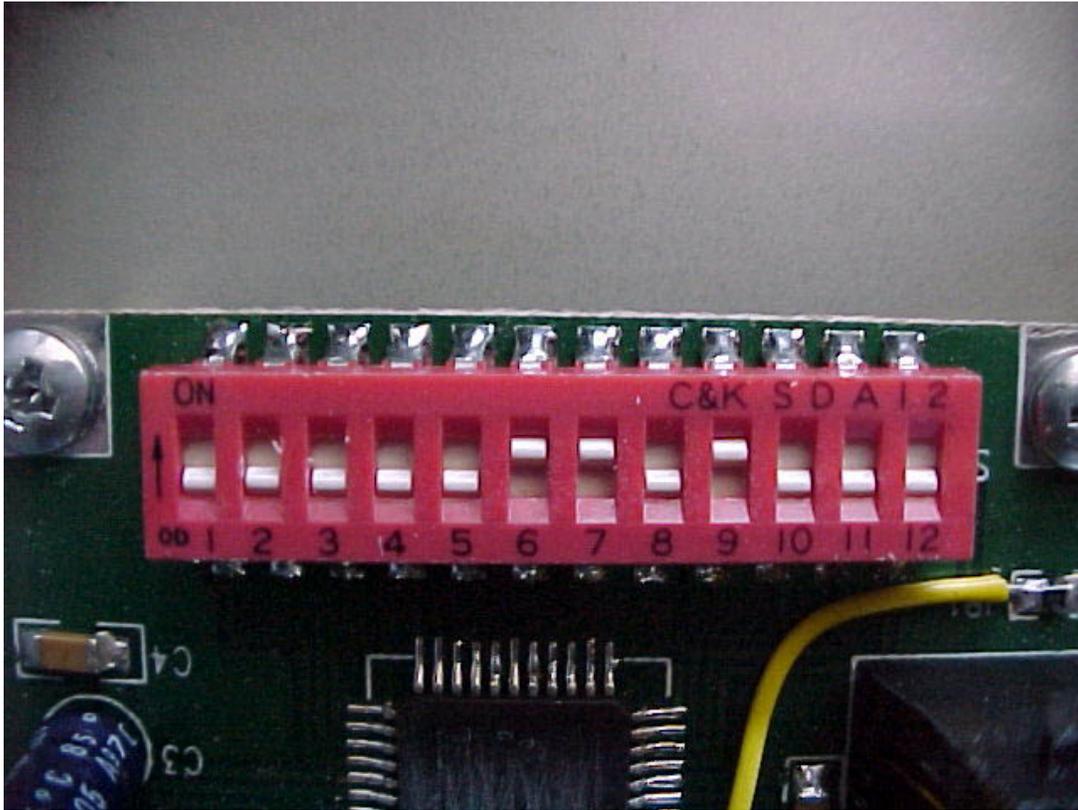
photo above you can see the red a blue leads attached together with a piece of black heat shrink slipped over the connection.

You probably will need to install the PIEXX IcomPROM in place of the original Icom RAM memory module to enable the serial interface in the IC-1271!

The following pictures show the UX-14PX installed in a R-71 receiver.



R-71 Cable installation



This is the standard dipswitch setting for a R-71 receiver at radio address 1AH