

A full manual has been not written yet. Briefly and with apologies for the bad English:

In version 0.95 all TButtons and TBitButtons have been replaced by TJButtons from the jujibo package by Julio Jiménez Borreguero. These are customizable buttons that can have more than one line of text, a user-selectable colour regardless of system and window manager used, themed or not, and the ability to resize the image, if any. So, if you want to recompile the sources, install first in Lazarus that library. The version used by the author (2.3, the latest available at the time) is included in the source package. These changes, while purely cosmetic, required an extensive overhaul of the the source code of the program, so please report any wrong behaviour.

Having (at last) installed in the CU of my own TRP8255 the latest firmware available (CU v92.0), the program has been modified to support the "Read CU8000R status" command available in that release. In the "Options" menu there is a new item called "CU firmware 92.0". If selected, after a check whether the CU firmware is really the 92.0 version, at program start the status is not restored from the last saved state but instead directly read from the CU. The last state saved on disk is loaded anyway before the status reading from the CU, if enabled, since there is no way to read the programmable tune step value directly from the CU, so it must be read from the last state file.

The programmable tune step handling is the major feature added in the 0.95 version. There are two new menu items dealing with it, the "Enable prog tune step" in the "Options" menu, and the "Program receiver tune step" in the "Other functions" menu. By default, the programmable tune step value is set to 10 kHz. Using the "Program receiver tune step" menu entry, it is possible to program any tune step value from 0.1 kHz to 99.9 kHz, with 100 Hz resolution. To activate the function, both in the program and in the CU, check "Enable prog tune step" in the Options menu. Doing that, a fourth state is added in the "TUNE RATE" button behaviour, which becomes 10→100→1000→programmable step. That state is shown in the program as well in the CU as all step LEDS OFF. NOTE. To enable in the CU the programmable tune step bit 4 of the Option register must be set to 1, i. e. 00010000 binary or 16 decimal. That is done automatically by the program when "Enable prog tune step" is selected.

To accommodate the new functions, some modifications were required in the format of the configuration, state and channel files. An effort has been made to make the new format compatible with the old, as far as common parameters are involved. When starting the program with an old format configuration file, the default value is assigned to the missing parameters and the configuration file updated. A warning message is also issued. When loading a state/channel file in the old format, a warning message is issued, the current value is assigned to the missing parameters and the file is automatically saved in the new format.

Two other submenu items have been added in the "Other functions" menu, the "Switch antenna OFF" item and the "Re-read configuration from CU" item. The first is supposed to switch OFF the antenna and the transmitter, the second will be useful only in case the state of the program has messed up, to reload in it the CU configuration. This menu entry is available only if the "CU firmware 92.0" is checked.

A fixed delay in the SendCommand procedure yet present in the code has been removed, speeding up a bit the program. On the CU firmware V92.0 this was no more required, at least on my CU. If you notice wrong behaviour in issuing commands to the CU, try to increase the "Options>Inter-character delay" menu item (default is zero). The original delay that has been removed was 10 ms.

Starting from the 0.90 version, code to resize the controls of the main window has been ported from an old Delphi program. The idea and first implementation belongs to Ari Hirviniemi. So no more too big main window, at start the main window is scaled to stay in the screen area and, if maximized, the size of the controls becomes bigger to use all the available space. The size and the X/Y position of the main window are saved in the configuration file when exiting the program and resumed at start-up.

The "SUPPLY/ON OFF" button starts program execution and connection with the Skanti CU. Before clicking on it, be sure to select in the "Options" menu the correct RS232 port and speed. The chosen configuration will be saved automatically.

When you start the program, the last RTX state (frequency, mode, filters, etc) will be restored. When you leave it, the actual state will be automatically saved. If no prior state exists, the program starts with and restores a default configuration (14200.0 MHz, USB, 1 kHz steps, TX on, full power, speaker on, volume attenuation 80, dimmer level 5, CU V92, programmable step and status reading disabled, no inter-character delay, yellow LED colour).

NOTE: this is mandatory, since in the v80.0 and earlier version of the CU firmware there is no way to read the state (frequency, mode, etc.) stored in the CU. The same holds for channels stored in the CU: there is a command to select one of them, but it is impossible to know what is the corresponding state. So, selecting a channel, e. g. 10, the RX and TX displays both show "CHAN 10" and all the buttons are disabled. To exit this state, select "Other functions>Exit Mem/Scan modes" menu entry, which rewrites the last known configuration in the RTX and reverts to the NORMAL state. When in the CU the firmware V92.0 is installed and the "Options>CU firmware 92.0" menu item is checked, this is no more required, since after recalling the wanted channel the program can know the state of the CU by issuing the command "Read CU8000R status".

The state can also be saved to and restored from a file. Default file name is <frequency>-<mode>.dat, e.g. 10100.8-TELEX.dat or, if split frequency/mode is in effect, <frequency RX>-<frequency TX>-<mode RX>-<mode TX>.dat, e.g. 900.0-14250.0-AM-USB.dat. If TX is disabled, TXOFF is shown instead of the TX frequency. State files saved in the Channels subdirectory (menu File>Save channel) are automatically read and shown in the Channels menu entry and can be loaded by just one click. To allow to rename and delete the saved state files from within the program, a very minimal file manager is built in (menu entries "File>Manage states" and "File>Manage channels").

Most of the buttons behaves as those in the Skanti CU, e.g. pressing "RX" "TX" "ENTER" the RX frequency is copied to the TX frequency. After clicking on a command requiring numeric input, the numbers may be entered with the on-screen numeric buttons or with the keyboard. To allow entering negative BFO frequency offsets using the on-screen keyboard, if the "Set BFO frequency" command is selected, a small [+/-] key is shown at right of the [ENTER] key.

There are some functions not present in the Skanti CU, such as "RX = TX", "TX = RX" and "Receive/Transmit" buttons and the message display. The most useful of these is the "Transceiver" option, which reflects any modifications in the RX (or TX) frequency to the TX (or RX) frequency. The TX (or RX) frequency update can be immediate after any change in RX (or TX) frequency, deferred until about 1s after the RX or TX tuning stops, or disabled.

The "Enable Status" option, if checked, starts polling the CU status (received and transmitted signal level, etc) every 0.5s and displays two bar-meters, one for the received signal strength and one for the transmitted signal power. Although beautiful, this really slows down the program and prevents to release the priority to the Skanti CU, so the microphone/PTT connected to the CU remains disabled, TX audio comes always from the TELEX input (for TELEX mode) or AUX input (for other modes except CW) and the PTT must be operated using the remote command, i. e. the "Transmit" button. If you want to use the transceiver in digital modes, e. g. FT8, it is advisable to connect the audio/PTT coming from the PC to the AUX audio/PTT input and disable the "Enable status" option.

The "Start always in LP mode" option if checked, precisely does what it says, regardless of the power level set in the saved state and is intended for those who have a non-Skanti automatic remote ATU which does not like to tune at full power.

Option "Use UTC time", if checked, makes the program use UTC time when programming the TRP8255 internal real-time clock or displaying the time in the frequency display when the program is in the "TX OFF" state, doing the required conversion from the PC local time. If unchecked, the time programmed and shown will be the PC time. See also the "SET TIME" and "TX OFF" buttons.

The program tries to disable non-active keys for the chosen mode (e.g. the AGC SLOW and AGC OFF in TELEX mode). If you want to leave all keys enabled regardless of they are active or not, then check the "Enable all controls" entry in the "Options" menu.

Frequency can be changed also by clicking on the RX (or TX) display. Left-clicking on a figure decrements that figure by one, right-clicking increments that figure by one, in the Skanti CU spirit (decrements at left, increments at right). This only happens if the final frequency is in the range of the RTX. Clicking on the decimal point the displayed frequency will be rewritten.

Last, you can use the mouse wheel to tune up and down. If the wheel is rotated with the cursor over one of the figures of the RX or TX frequency, that figure is incremented or decremented. This now works also under Windows. If the wheel is rotated with the cursor anywhere else, RX frequency is incremented or decremented by the tuning step in effect. This is the fastest tuning method since only one character must be sent to the CU. When the "Transceiver>Immediate update" option is selected, the wheel must be rotated very slowly, since at every turn both the transmitter and receiver frequencies must be set. Mouse wheel events that come in the middle of a previous event are ignored. If it is wanted to enable the transceiver option, it is advisable to set it to the "deferred update" mode.

Since the TX frequency can be set only in 100 Hz steps, when RX frequency is incremented or decremented in 10 Hz steps the TX frequency is set to the nearest 100 Hz value.

There are also some keyboard shortcuts:

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+ or ↑: Tune up
- or ↓: Tune down
/: Change tune rate
*: Invoke TX tune
R: Set receive frequency
T: Set transmit frequency
U: Mode USB
L: Mode LSB
A: Mode AM
C: Mode CW
M: Mode MCW
E: Mode R3E
X: Mode TELEX
.: Toggle between LOW, MEDIUM and FULL power
SPACE BAR: Receive/Transmit toggle

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The above commands can be issued either upper or lower case. The frequency value for commands R and T (or RX and TX buttons) can be entered either with the keyboard or with the on-screen numeric keys.

#### OTHER COMMANDS NOT EXISTING IN CU8000

The message display shows informations about the command being executed or status/info messages (e. g. tuning and reduced power status and info deriving from the "READ XX VERSION" commands). Double-clicking on it clears display.

Pressing once the "SET TIME" button starts, as usual, the time input on the TX FREQUENCY/CLOCK display. Pressing it one more time sets the TX FREQUENCY/CLOCK display to the current PC time. ENTER then writes the new time to the Skanti CU.

The tuning step can be selected either by pressing the "STEP" button or by clicking on the corresponding "LED". The behaviour is however different: when using the "STEP" button, the behaviour is the same of the CU8000, so the 10 Hz figure is left active and displayed. By clicking on the corresponding "LED", the 100 Hz and/or 10Hz figures are reset to zero and the latter not displayed anymore.

Example: being at 10 Hz step, frequency 12345.67 kHz:

- clicking the "STEP" button: step becomes 100 Hz, the frequency stays at 12345.67 kHz and clicking on the "UP" button the frequency becomes 12345.77 kHz;
- clicking on the "LED" under the 100 Hz figure: step becomes 100 Hz, the frequency is reset to 12345.70 and displayed as 12345.7 (no more 10 Hz

figure) and clicking, as above, on the "UP" button, the frequency becomes 12345.8 kHz.

#### NOTE ON CONFIGURATION AND STATE FILES.

All configuration files are kept in the .SkantiControl (Linux) or SkantiControl (Windows) directory of your home directory. In case the program configuration has messed up, delete (or move) the "Config.dat" and "LastState.dat" files and the program at next start will recreate them using the default configuration.

#### TODO.

- \* Implement some remote functions that now are either not implemented at all (e. g. SCAN commands) or implemented at basic level but not tested due to missing options on my TRP8255 (e. g. DUPLEX, SQUELCH) or implemented only approximately due to not well understood documentation on my side (e. g. SCAN BUFFER commands).
- \* Thoroughly check correctness of the state machine against the CU8000 behaviour.