

4. OPERATION

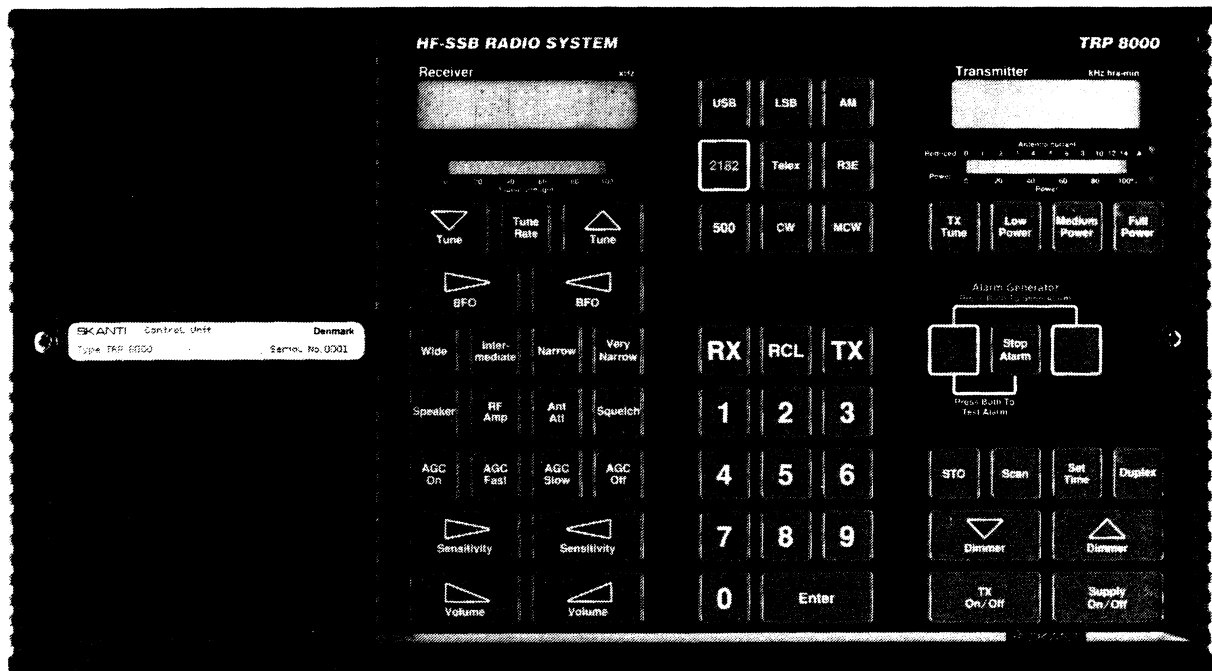


Fig. 4.1

The equipment is operated from the Control Unit (fig. 4.1) and is 100% keyboard controlled. For quick reference section 4.1 gives the operating instructions as pictures of keying sequences, followed by a short description of the action caused by each key. Parentheses around key-numbers indicates that the corresponding keys should only be pressed under the conditions described below. A description of all the keyboard operating controls is found in section 4.2.

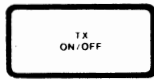
4.1 OPERATING INSTRUCTIONS

4.1.1 SWITCH ON



- 1 Press "SUPPLY ON/OFF"
The equipment will now enter the state it was in before being switched OFF, as indicated by the displays and annunciators.
- (2) Increase light intensity of displays and annunciators if too low.
- (3) Decrease light intensity of displays and annunciators if too high.

4.1.2 TRANSMITTER ON



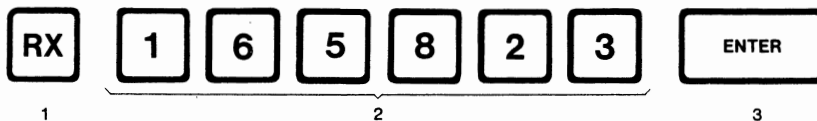
1

- 1 Press "TX ON/OFF" if the transmitter is OFF.
The transmitter display will then show the transmitter frequency.

If the transmitter display is showing the time of day, as indicated by the flashing time cursor (3rd digit), the equipment is in the "Receive only" state with all transmitter functions switched OFF.

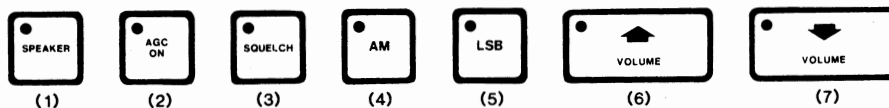
4.1.3 RECEIVING

4.1.3.1 A. CHANGE RECEIVER FREQUENCY (16582.3 kHz)



- 1 Press "RX"
The receiver display is blanked and its decimal point starts flashing.
- 2 Enter desired frequency in the receiver display via the numeric keys. The last digit is always interpreted as the "100 Hz" digit.
- 3 Press "ENTER"
The decimal point stops flashing if the frequency is valid. The whole display starts flashing if the frequency is invalid.

4.1.3.2 B. SET RECEIVER (MODE)



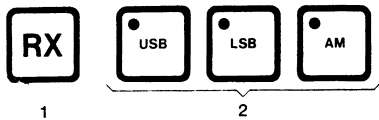
- (1) Press "SPEAKER" if the loudspeaker is OFF.
Annunciator indicates loudspeaker ON.
- (2) Press "AGC ON" if the AGC is OFF.
Annunciator indicates AGC ON.
- (3) Press "SQUELCH" if the Squelch is OFF.
Annunciator indicates Squelch ON.
- (4) Press "AM" if the received signal is an AM (A3E) signal.

(5) Press "USB" if the received signal is an SSB (J3E) signal.
Annunciators indicate the mode selected.

(6) Increase volume if sound level is too low.

(7) Decrease volume if sound level is too high.

4.1.3.3 C. SELECT SEPARATE RECEIVER MODE



1 Press "RX"

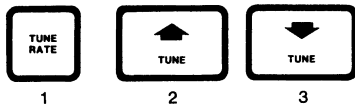
The receiver display is blanked and its decimal point starts flashing.

2 Press "USB", "LSB" or "AM"

If the TX-mode is either USB, LSB, AM, or R3E then the RX-mode is accepted and the receiver display restored. If the TX-mode is neither USB, LSB, AM nor R3E then nothing will happen until either a valid mode-key, a receiver frequency or "ENTER" is pressed.

If the RX-mode is different from the TX-mode then the mode annunciators indicate the mode according to keyline. E.g. if the unit is not keyed then the RX-mode annunciator is turned ON constantly while the TX-mode annunciator is flashing very fast.

4.1.3.4 D. RECEIVER TUNING



1 Press "TUNE RATE" to change frequency step.

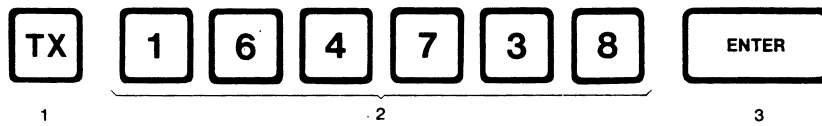
An annunciator below one of the three right hand digits of the receiver display indicates the frequency step selected. 10 Hz, 100 Hz and 1000 Hz steps are possible.

2 Increase receiver frequency in steps selected.

3 Decrease receiver frequency in steps selected.

If "TUNE" is pressed shortly the receiver frequency is changed one step up or down. Holding "TUNE" pressed for more than 0.5 sec. changes the receiver frequency continuously up or down with 10 steps/sec.

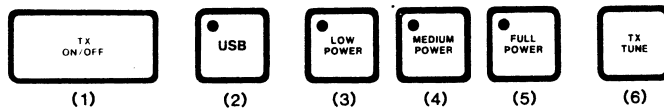
4.1.4.1 A. CHANGE TRANSMITTING FREQUENCY (16473.8 kHz)



- 1 Press "TX"
The transmitter display is blanked and its decimal point starts flashing.
- 2 Enter desired frequency in the transmitter display via the numeric keys.
The last digit is always interpreted as the "100-Hz" digit.
- 3 Press "ENTER"
If TX is ON then the decimal point stops flashing if both frequency and mode are valid, and the whole display starts flashing if frequency and/or mode is invalid.

If TX is OFF the transmitter display will show the time of day.

4.1.4.2 B. SET TRANSMITTER (Mode-Power-Tune)



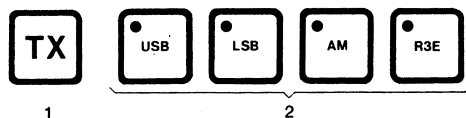
- (1) Press "TX ON/OFF" if the transmitter is OFF.
The transmitter display will then show the transmitter frequency, flashing if frequency and/or mode is invalid.
- (2) Press "USB" to transmit an SSB (J3E) signal.
Annunciators indicate the mode selected, and the transmitter display starts flashing if the mode is invalid.
- (3) Press "LOW POWER"
- (4) Press "MEDIUM POWER" according to desired power level.
- (5) Press "FULL POWER"

Annunciators indicate the power level selected. If the transmitter frequency has been changed the Antenna Tuning Unit will automatically tune its input impedance on the new frequency in less than 1.5 sec when the handset key is pressed, and you are then ready to transmit.

- (6) Press "TX TUNE" if the power meter annunciator starts flashing during transmission. This indicates that the Antenna Tuning Unit input SWR is greater than 1:3, and may happen if the antenna impedance has changed due

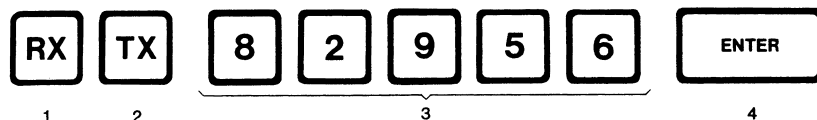
to external circumstances.

4.1.4.3 C. SELECT SEPARATE TRANSMITTER MODE



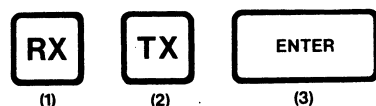
- 1 Press "TX"
The transmitter display is blanked and its decimal point starts flashing.
- 2 Press "USB", "LSB", "AM" or "R3E"
If the RX-mode is either USB, LSB, or AM then the TX-mode is accepted and the transmitter display restored. If the RX-mode is neither USB, LSB nor AM then nothing will happen until either a valid mode-key, a transmitter frequency or "ENTER" is pressed.
If the TX-mode is different from the RX-mode then the mode annunciators indicate the mode according to keyline. E.g. if the unit is keyed then the TX-mode annunciator is turned ON constantly while the RX-mode annunciator is flashing very fast.

4.1.5 FAST SET-UP FOR SIMPLEX OPERATION (8295.6 kHz)



- 1 Press "RX"
- 2 Press "TX"
The receiver and transmitter displays are blanked, and their decimal points start flashing.
- 3 Enter the desired frequency in the receiver and transmitter displays via the numeric keys.
- 4 Press "ENTER"
If frequency and mode are valid the decimal points stop flashing. Set receiver and transmitter as described previously.

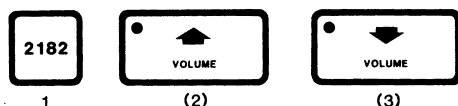
4.1.6 COPYING RX FREQUENCY TO TX FOR SIMPLEX OPERATION



- 1 Press "RX"
The receiver display will be blanked.

- 2 Press "TX"
The transmitter display will be blanked.
- 3 Press "ENTER"
The receiver frequency will be copied to the transmitter display, and the 10 Hz digit on the receiver display will be cleared.

4.1.7 FAST SET-UP FOR 2182 kHz



- 1 Press "2182"
This instantly changes receiver and transmitter frequency to 2182 kHz, selects AM (H3E) mode, selects FULL POWER and enables transmitter function (TX ON). The loudspeaker and AGC are automatically switched ON and RF-AMP, ANT ATT and SQUELCH switched OFF. Antenna current is displayed when transmitting, unless PRESET bit 6 is set (see Second Functions).
- (2) Increase volume if sound level is too low.
- (3) Decrease volume if sound level is too high.
Press handset key, wait a couple of seconds for the automatic tuning, and you are ready to transmit.

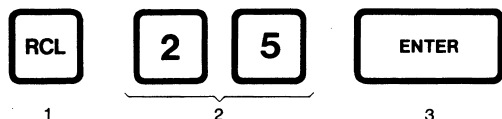
4.1.8 STORING AND RECALLING FREQUENCY CHANNELS

4.1.8.1 STORING RECEIVER/TRANSMITTER FREQUENCY PAIRS AND MODE



- 1 Press "STO"
The receiver and transmitter displays are blanked and their decimal points start flashing. If "STO" is pressed by mistake, just press "ENTER" to escape store mode.
- 2 Enter the channel-number in the receiver display via the numeric keys.
Channels 0-75 are available.
- 3 Press "ENTER"
If the channel-number is valid the receiver and transmitter displays show the stored frequency-pair. If the channel-number is invalid the receiver display starts flashing.

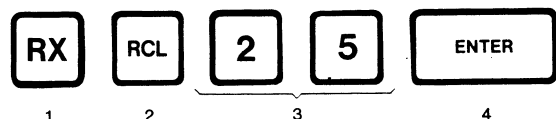
4.1.8.2 RECALLING RECEIVER/TRANSMITTER FREQUENCY PAIRS AND MODE



(Channel no. 25)

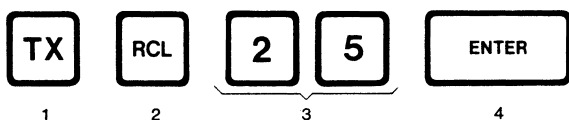
- 1 Press "RCL"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Enter the channel-number in the receiver display via the numeric keys.
Channels 0-75 are available.
- 3 Press "ENTER"
If the channel-number is valid the receiver and transmitter displays show the recalled frequency-pair, an annunciator shows the recalled mode and the AGC is switched ON. If the channel-number is invalid the receiver display starts flashing.

4.1.8.3 RECALLING RECEIVER FREQUENCY



- 1 Press "RX"
The receiver display is blanked and its decimal point starts flashing.
- 2 Press "RCL"
- 3 Enter the channel-number in the receiver display via the numeric keys.
Channels 0-75 are available.
- 4 Press "ENTER"
If the channel-number or frequency is invalid the receiver display starts flashing. If both channel-number and frequency is valid the receiver display shows the recalled frequency.

4.1.8.4 RECALLING TRANSMITTER FREQUENCY



- 1 Press "TX"
The transmitter display is blanked and its decimal point starts flashing.
- 2 Press "RCL"

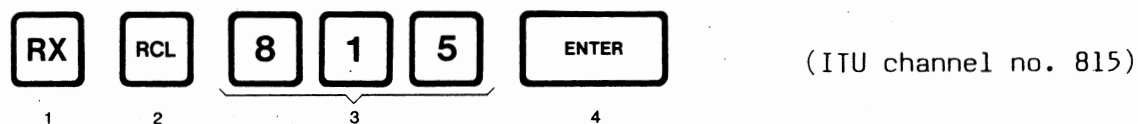
- 3 Enter the channel-number in the transmitter display via the numeric keys. Channels 0-75 are available.
- 4 Press "ENTER"
If the channel-number or frequency and/or mode is invalid the transmitter display starts flashing. If both channel-number, frequency and mode is valid the transmitter display shows the recalled frequency if TX is ON, and the time of day if TX is OFF.

4.1.8.5 RECALLING ITU CHANNEL FREQUENCY PAIRS FROM PROM



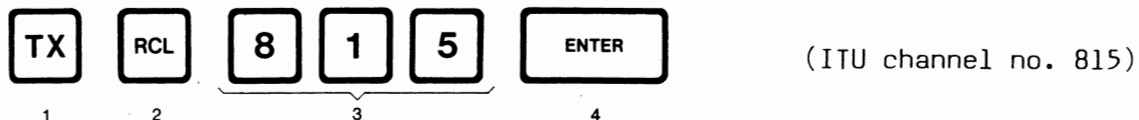
- 1 Press "RCL"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Enter the channel-number in the receiver display via the numeric keys.
- 3 Press "ENTER"
If the channel-number is invalid the receiver display starts flashing. If the channel-number (according to mode) is valid the receiver display shows the ITU receiver frequency and the transmitter display shows the ITU transmitter frequency if TX is ON, and the time-of-day if TX is OFF.

4.1.8.6 RECALLING ITU CHANNEL RECEIVER FREQUENCY FROM PROM



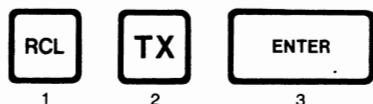
- 1 Press "RX"
The receiver display is blanked and its decimal point starts flashing.
- 2 Press "RCL"
- 3 Enter the channel-number in the receiver display via the numeric keys.
- 4 Press "ENTER"
If the channel-number is invalid the receiver display starts flashing. If the channel-number (according to mode) is valid the receiver display shows the ITU receiver frequency.

4.1.8.7 RECALLING ITU CHANNEL TRANSMITTER FREQUENCY FROM PROM



- 1 Press "TX".
The transmitter display is blanked and its decimal point starts flashing.
- 2 Press "RCL"
- 3 Enter the channel-number in the transmitter display via the numeric keys.
- 4 Press "ENTER"
If the channel-number is invalid the transmitter display starts flashing.
If the channel-number (according to mode) is valid the transmitter display shows the ITU transmitter frequency if TX is ON, and the time-of-day if TX is OFF.

4.1.8.8 RECALLING TRANSMITTER FREQUENCY FROM PROM

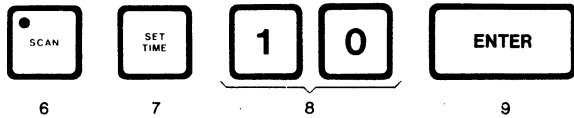
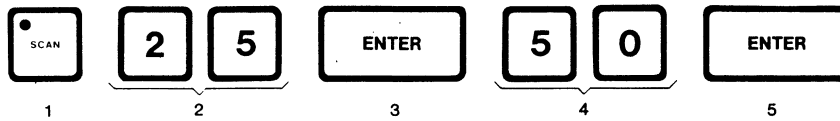


- 1 Press "RCL"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Press "TX"
The receiver is reactivated and the first TX PROM frequency is shown in the transmitter display. Repressing "TX" will transfer the next TX PROM frequency to the transmitter display if the PROM location is programmed.
- 3 Press "ENTER"
If TX is ON then the decimal point stops flashing if both frequency and mode are valid, and the whole display starts flashing if frequency and/or mode is invalid.

If TX is OFF the transmitter display will show the time-of-day.

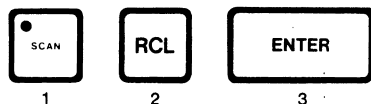
4.1.9 SCANNING STORED RECEIVER/TRANSMITTER FREQUENCY PAIRS

4.1.9.1 A. SET SCANNING PARAMETERS (Channel 25-50, time 1.0 sec.)



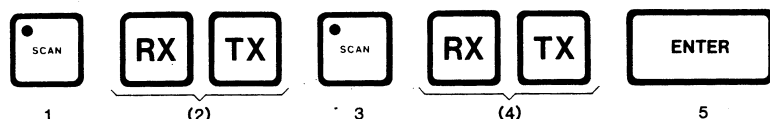
- 1 Press "SCAN"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Enter the start channel-number in the receiver display via the numeric keys.
- 3 Press "ENTER"
If the channel-number is valid the receiver display is blanked. If not, it starts flashing and you must repeat steps 1, 2 and 3.
- 4 Enter the stop channel-number (greater than the start channel-number) in the receiver display via the numeric keys.
- 5 Press "ENTER"
If the channel-number is valid the receiver and transmitter displays are reset to their initial states. If not, the receiver display starts flashing and you must press "SCAN", enter a valid stop channel-number and press "ENTER" again.
- 6 Press "SCAN"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 7 Press "SET TIME"
- 8 Enter the dwell time (0.1-9.9 sec.) in the receiver display via the numeric keys.
- 9 Press "ENTER"
The receiver and transmitter displays are reset to their initial states.

4.1.9.2 B. RECALL SCANNING PARAMETERS AND RESET SCAN POINTER



- 1 Press "SCAN"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Press "RCL"
The start and stop channel-number are shown in the receiver display and the dwell time in the transmitter display. The scan pointer is reset to the start channel-number.
- 3 Press "ENTER"
The receiver and transmitter displays are reset to their initial states.

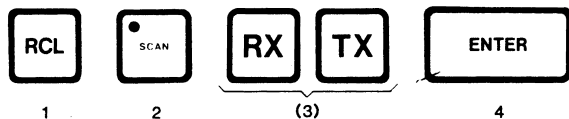
4.1.9.3 C. START/STOP AUTOMATIC SCANNING



- 1 Press "SCAN"
The receiver and transmitter displays are blanked and their decimal points starts flashing.
- (2) Control external scan port. Press "RX" to open port. Press "TX" to close port. If the port is open the scan s/s signal can be used to start automatic scanning. The port is initially closed.
- 3 Press "SCAN"
The scanning annunciator starts flashing indicating that the equipment is in automatic scanning mode. The receiver/ transmitter frequency pairs stored in each channel between start and stop will be shown in the receiver and transmitter displays for the dwell time set. This is repeated until "ENTER" is pressed. If the scanning parameters has been changed, some time may pass before the start channel frequencies appear in the displays.
- (4) Control external scan port. Press "RX" to open port. Press "TX" to close port. If the port is open the scan s/s signal can be used to stop automatic scanning. If neither keys are operated the port-state is as specified in (2).
- 5 Press "ENTER"
The scanning annunciator stops flashing and the receiver and transmitter are set to the frequencies indicated by the displays.

Note: When OPTION bit 3 is set (see Second Functions), the squelch may be switched on to allow a special scanning in the phone modes (USB, LSB, AM, R3E). Each channel will be muted for 1.5 seconds to provide setting time to the squelch. After this period muting is handled by the squelch in the normal way. If the squelch mutes the signal for more than the dwell time programmed, the scanning will continue.

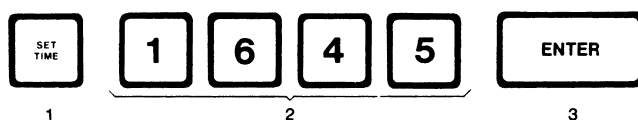
4.1.9.4 D. MANUAL SCANNING



- 1 Press "RCL"
The receiver and transmitter displays are blanked and their decimal points start flashing.
- 2 Press "SCAN"
The scanning annunciator is turned constantly ON indicating that the equipment is in manual scanning mode. The start or next channel-number frequency pair is recalled and shown in the receiver and transmitter displays until "SCAN" is repressed, which will recall the next pair.
- (3) Control external scan port. Press "RX" to open port. Press "TX" to close port. If the port is open the scan s/s signal can be used to step manual scanning to next frequency pair. The port is initially closed.
- 4 Press "ENTER"
Manual scan is terminated, leaving the displayed frequency pair unchanged.

4.1.10 CLOCK FUNCTIONS

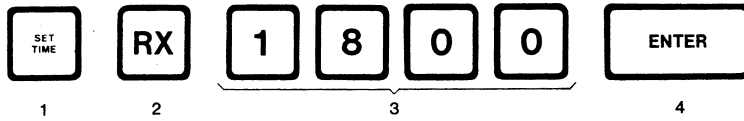
4.1.10.1 SET TIME OF DAY (16 hrs. 45 min.)



- 1 Press "SET TIME"
The transmitter display is blanked and the time cursor set (3rd digit).
- 2 Enter the time of day in the transmitter display via the numeric keys. The first two digits are interpreted as hours and the last two digits as minutes.
- 3 Press "ENTER"
The transmitter display shows the time of day if TX is OFF and the transmitter frequency if TX is ON. If you set time according to a time signal you must press "ENTER" exactly when the signal is given as this

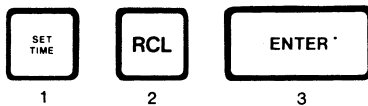
synchronizes the clock.

4.1.10.2 SET WAKE-UP TIME (18 hrs. 00 min.)



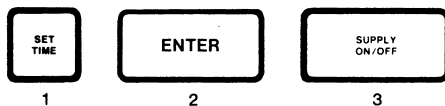
- 1 Press "SET TIME"
The transmitter display is blanked and the time cursor set (3rd digit).
- 2 Press "RX"
- 3 Enter the wake-up time in the transmitter display via the numeric keys.
The first two digits are interpreted as hours and the last two digits as minutes.
- 4 Press "ENTER"
The transmitter display is reset to its initial state.

4.1.10.3 RECALL WAKE-UP TIME



- 1 Press "SET TIME"
The transmitter display is blanked and the time cursor set (3rd digit).
- 2 Press "RCL"
The transmitter display shows wake-up time.
- 3 Press "ENTER"
The transmitter display is reset to its initial state.

4.1.10.4 START DORMANT STATE



- 1 Press "SET TIME"
The transmitter display is blanked and the time cursor set (3rd digit).
- 2 Press "ENTER"
The transmitter display is reset to its initial state.
- 3 Press "SUPPLY ON/OFF"

The equipment is switched OFF, and will automatically be switched ON again at wake-up time recalling the state it was in before being switched OFF.

4.1.11 AUTOTELEX

To select AUTOTELEX mode just make sure that the last keying sequence has been terminated. In this state the CU responds to a frequency command from the ARQ unit by selecting TELEX mode and shifting to a special AUTOTELEX state which is identified by the flashing TELEX annunciator.

In AUTOTELEX mode the following keys are operative:



Switches speaker ON/OFF as described in section 4.2.



Terminates AUTOTELEX mode. The TELEX annunciator will stop flashing and normal CU operation resumed.



If OPTION bit 6 is set this key is disabled. Otherwise it functions exactly as the TELEX key (described above).

In some situations it is desirable to interrupt the ARQ scanning temporarily while making a phone call. In this case OPTION bit 5 should be set and TELEX mode selected manually prior to ARQ scanning. A phone call is then initiated by selecting the appropriate phone mode which will lock out the ARQ frequency commands, thus enabling manual frequency selection. When the phone call is completed the TELEX mode should be reselected to allow further ARQ scanning.

When the "2182" key is pressed, the Control Unit stops listening to the telex terminal until a new transmitter frequency different from 2182 is entered from the keyboard.

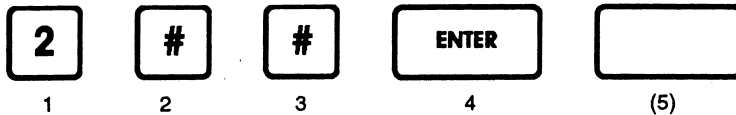
AUTOTELEX in MARITEX mode.

TRP 8250 D will protect against erroneous transmitting by not allowing continuous keying in more than 1/2 minute in MARITEX mode. Passed this time limit the transmitter will be switched OFF and the beeper activated until a key is pressed.

4.1.12 SECOND FUNCTIONS

The second function level provides enhanced system control to the advanced user without sacrificing simplicity of the primary keypad functions. The level consists of 10 menus (pages) each containing a maximum of 10 functions (lines). Operation on this level will always be identified by the non-standard display symbol "┐" in the left or right most tab of at least one of the displays.

4.1.12.1 SECOND FUNCTION SYNTAX



- 1 Press "2".
The transmitter display is blanked and the decimal points start flashing. The receiver display shows "~~" to identify a non-standard display and "2". If "2" was pressed by mistake "ENTER" will terminate second function mode.
- 2 Press a number.
The number is passed to the receiver display. This number identifies the second function page. If the number was pressed by mistake "ENTER" will terminate second function mode.
- 3 Press a number.
The number is passed to the receiver display. This number identifies the second function line. If the number was pressed by mistake "2" will restart the second function mode.
- 4 Press "ENTER".
If page and line numbers are not valid the receiver display starts flashing and the second function mode can be either restarted by pressing "2" or terminated by pressing "ENTER". If both page and line numbers are valid the respective second function is executed and if no further keys are required in the specific function the displays are restored to the state prior to second function execution.
- (5) Most second functions require additionally keys to be pressed. Typically "2" will restart second function mode and "ENTER" terminate it. Some second functions require confirmation via the "STO" key. This situation is indicated by a special warning display-flash shifting between "]]]]]]]" and the entered number. Pressing "STO" will execute the function, "2" will restart the second function mode and any other key will terminate it.

Second functions requiring confirmation:

250: Clear RAM
251: Reset system
270-278: "OPTION" register
280-287: Toggle "PRESET" register bit 0-7
290-298: "GUARD" register

4.1.12.2 PAGE 0 (20#) Self test. For detailed information see self test description in chapter 8.

Executable lines:

- 200: Start automatic stepped self test.
- 201: Start manually stepped self test.
- 202: Start automatic stepped self test from an arbitrary test number.
- 203: Start manually stepped self test from an arbitrary test number.

4.1.12.3 PAGE 4 (24#)

Miscellaneous functions.

Executable lines:

- 241: Read accumulated on-time. The receiver display will show total operation time of the TRP 8250 S with 1 hour resolution. Pressing "2" or "ENTER" will restart or terminate second function.
- 242: Read and program receiver tune step. The receiver display shows the present programmable tune step. A new tune step may be entered via the numeric keys.
Tune steps between 100 Hz and 99 kHz are possible.
Pressing "ENTER" will terminate second function.
To use this additional tune step, OPTION bit 4 should be set to 1 (ref. second function 274).
In this case the "TUNE RATE" key will introduce a fourth state indicated by all tune rate annunciators switched off.
- 243: Read single frequency formats in configuration PROM. The reading address is initialized to PROM address 0. The receiver display shows the programmed frequency if the RX bit = 1. The transmitter display shows the programmed frequency if the TX bit = 1.
The mode annunciators show the programmed modulation(s). Pressing "DIMMER UP" will increase the reading address to the next higher located format if it is not the "LIMITER BYTE".
Pressing "DIMMER DOWN" will decrease the reading address to the next lower located format if the present reading address is higher than PROM address 0.
Keeping either "DIMMER" key pressed will advance the reading address automatically.
Pressing "2" or "ENTER" will restart or terminate second function.
For further PROM format information refer to section 4.10.
- 244: Control BFO frequency. The receiver display shows the present BFO frequency. The transmitter display shows the stored BFO frequency selected on power-up. Pressing "STO" will store the present frequency. Pressing "RCL" will recall the stored frequency. Pressing "2" or "ENTER" will restart or terminate second function.

245: Read special system parameters in configuration PROM. The receiver display shows the PROM address in decimal initialized to top of PROM = 4095. The transmitter display shows the PROM data in decimal. Pressing "RCL" will change the displayed data to hexadecimal, useful when reading BCD. Since the display decoder is not designed for letters the following symbols are displayed for hexadecimals greater than 9:

A : 
B : 
C : 
D : 
E : 
F : blank

Pressing "DIMMER DOWN" will show the next lower PROM address.
Pressing "DIMMER UP" will show the next higher PROM address.
Pressing "2" or "ENTER" will restart or terminate second function.

246: Read CU program release date and version. The receiver display shows release date (year/month/day). The transmitter display shows version number.
Pressing "2" or "ENTER" will restart or terminate second function.

247: Read TU program release date and version. The receiver display shows release date (year/month/day). The transmitter display shows version number.
Pressing "2" or "ENTER" will restart or terminate second function.

248: Adjust beeper sound level. A continuous control beeping is started.
Pressing "VOLUME UP" will increase the sound level.
Pressing "VOLUME DOWN" will decrease the sound level.
Pressing "2" or "ENTER" will restart or terminate second function preserving the new beeper sound level.

249: Switch antenna OFF. The antenna and transmitter are switched OFF. The power annunciators are turned OFF to identify antenna OFF and transmitter display shows time of day to identify transmitter OFF. Finally second function is terminated. When "TX ON/OFF" is then pressed both antenna and transmitter are switched ON and power annunciators and transmitter display restored to normal.

4.1.12.4 PAGE 5 (25#) Miscellaneous functions. This page can not be entered when "GUARD" bit 7 is set (see second function page 9).

Executable lines:

250: Clear RAM. The function requires confirmation as described for the syntax key (5). All stored frequency pairs and modes, the "OPTION" register and "GUARD" register will be cleared (=0) and second function terminated.

251: Reset system. The function requires confirmation as described for the syntax key (5). 32 msec after releasing the "STO" key, both CU and TU processors are reset by running the power-up program.

4.1.12.5 PAGE 7 (27#)

Controls an 8-bit "OPTION" register.

Executable lines:

270: Toggle "OPTION" bit 0
271: - - - - 1
272: - - - - 2
273: - - - - 3
274: - - - - 4
275: - - - - 5
276: - - - - 6
277: - - - - 7
278: Clear "OPTION" register
279: Display "OPTION" register (bits 0-3 in transmitter display, bits 4-7 in receiver display).

All lines will display the resulting "OPTION" register.
Pressing "2" or "ENTER" will restart or terminate second function.

"OPTION" bit functions:

BIT	LEVEL	FUNCTION
0	-	Reserved for future use
1	0	Normal
	1	Disable numeric display
2	0	Normal
	1	Disable mode display
3	0	Normal
	1	Enable special squelched scanning in "phone mode"
4	0	Normal
	1	Enable programmable receiver tune rate
5	0	Normal
	1	Enable phone call interrupts in AUTOTELEX mode
6	0	Normal
	1	Disable "ENTER" key during AUTOTELEX mode
7	0	Normal
	1	No time-display "cursor"

4.1.12.6 PAGE 8 (28#) Controls an 8 bit "PRESET" register intended for use in installation only. Special system parameters which are difficult to specify before installation can be changed on location by toggling the respective bit in this non-volatile register. To protect the "PRESET" register against erroneous changes Page 8 can not be entered when "GUARD" bit 7 is set. Toggling any bit requires confirmation as described for the syntax key (5). Further more "PRESET" is excluded from the CLEAR RAM function (250).

Executable lines:

280: Toggle "PRESET" bit 0
281: - - - - 1
282: - - - - 2
283: - - - - 3
284: - - - - 4
285: - - - - 5
286: - - - - 6
287: - - - - 7
289: Display "PRESET" register (bits 0-3 in transmitter display, bit 4-7 in receiver display).

All lines will display the resulting "PRESET" register. Pressing "2" or "ENTER" will restart or terminate second function.

"PRESET" bit functions:

BIT	LEVEL	FUNCTION
0	-	Reserved for future use
1	-	- - - -
2	-	- - - -
3	-	- - - -
4	0	Normal
	1	Enable "Key inhibit"
5	0	Normal
	1	Disable power display (ampere only)
6	0	Normal
	1	Disable ampere display (power only)
7	0	Normal
	1	Complement external scan transitions

4.1.12.7 PAGE 9 (29#) Controls an 8-bit "GUARD" register. This page can not be entered when "GUARD" bit 7 is set (see following explanation).

Executable lines:

290: Toggle "GUARD" bit 0
291: - - - - 1
292: - - - - 2
293: - - - - 3
294: - - - - 4
295: - - - - 5
296: - - - - 6
297: - - - - 7
298: Clear "GUARD" register.
299: Display "GUARD" register (bits 0-3 in transmitter display, bit 4-7 in receiver display).

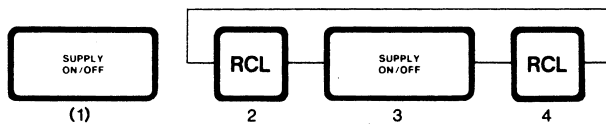
All lines will display the resulting "GUARD" register. Pressing "2" or "ENTER" will restart or terminate second function.

"GUARD" bit functions:

BIT	LEVEL	FUNCTION
0	0	Normal
	1	Inhibit direct entry of RX frequencies
1	0	Normal
	1	Inhibit "RX" key
2	0	Normal
	1	Inhibit direct entry of TX frequencies
3	0	Normal
	1	Inhibit "TX" key
4	0	Normal
	1	Inhibit store function
5	0	Normal
	1	Inhibit "STO" key
6	0	Normal
	1	Inhibit entry of scan parameters
7	0	Normal
	1	Inhibit certain second function pages

If programmed in the Configuration PROM (ref. section 5.12), either of the RX (bit 0 & 1) and TX (bit 2-3) GUARD bits set to 1 will cause the respective display to show channel numbers exclusively. If no channel number applies to the frequency then a "C" will be displayed (e.g. immediately after "SUPPLY ON".

Clear GUARD-bit 7 (PAGE GUARD)



(1) Switch supply OFF.

2 Press "RCL" and keep it.

3 Switch supply ON.

4 Keep "RCL" pressed until the beeper sounds.

Guard-bit 7 is now cleared and all second function pages can be entered.

To prevent unauthorized use this syntax is not described in the User Manual.

4.1.12.8 SECOND FUNCTIONS SUMMARY

200: Start automatically stepped self test
201: Start manually stepped self test
202: Start automatic stepped self test from an arbitrary test number.
203: Start manually stepped self test from an arbitrary test number.

241: Read accumulated on-time
242: Read and program receiver tune step
243: Read single frequency formats
244: Control BFO frequency
245: Read special system parameters
246: Read CU release date and version
247: Read TU release date and version
248: Adjust beeper sound level
249: Turn OFF antenna

250: Clear RAM
251: Reset system

270-277: Toggle "OPTION" register bit 0-7
278: Clear "OPTION" register
279: Read "OPTION" register

280-287: Toggle "PRESET" register bit 0-7
289: Read "PRESET" register

290-296: Toggle "GUARD" register bit 0-6
297: Set "GUARD" register bit 7
298: Clear "GUARD" register
299: Read "GUARD" register

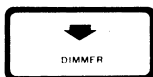
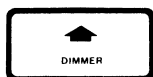
4.2 DESCRIPTION OF OPERATING CONTROLS



Switches ON/OFF the equipment power supply. When switched ON the equipment enters the state it was in just before being switched OFF.



Switches ON/OFF the transmitter functions. The transmitter display shows the transmitter frequency when switched ON, and the time of day when switched OFF.



Increases and decreases the light intensity in the displays, meters and annunciators.



Storing of receiver/transmitter frequency pairs and mode. When "STO" is pressed the receiver and transmitter displays are blanked and their decimal points start flashing, indicating that a channel number (0-75) must be entered in the receiver display via the numeric keys.



Setting/recalling scanning parameters and start/stop scanning of stored receiver/transmitter frequency pairs. The annunciator is flashing in automatic scanning mode and turned constantly ON in manual scanning mode. (for details see section 4.1)



Setting time of day, setting/recalling wake-up time, starting dormant state and setting dwell time in scanning. (for details see section 4.1)



Switches ON/OFF duplex operation of the equipment. Annunciator ON indicates that duplex operation is selected. When duplex is ON, the receiver is constantly active, even when keying the transmitter. If transmitter and receiver frequencies are 20 kHz or less apart, the transmitter display and duplex annunciator are flashing.



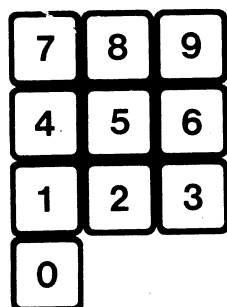
- a) Primary function: Change of receiver frequency. When "RX" is pressed the receiver display is blanked and its decimal point starts flashing, indicating that a new receiver frequency must be entered into the display via the numeric keys.
- b) Secondary function: Setting of wake-up time, when "RX" is pressed immediately after "SET TIME". Opening of the external scan port (see section 4.1)



- a) Primary function: Change of transmitter frequency. When "TX" is pressed the transmitter display is blanked and its decimal points start flashing, indicating that a new transmitter frequency must be entered into the display via the numeric keys.
- b) Secondary function: Recalling of transmitter frequency from PROM. Closing of the external scan control port (see section 4.1)



- a) Primary function: Recalling stored receiver/ transmitter frequencies. When "RCL" is pressed the receiver and transmitter displays are blanked and their decimal points start flashing, indicating that a channel-number (0-75) must be entered into the receiver display via the numeric keys.
- b) Secondary function: Recalling wake-up time, when "RCL" is pressed immediately after "SET TIME" and recalling scanning parameters when "RCL" is pressed immediately after "SCAN" (see section 4.1)



Numeric keys

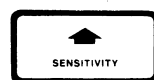
- a) Primary functions:
Entering of receiver/transmitter frequencies and channel numbers.
- b) Secondary functions:
Setting scanning parameters, time of day, wake up time and sound level of beeper.
Refer to section 4.1 for further details.



Terminating keyboard operation. "ENTER" must be pressed to terminate all keyboard operations initiated by the "RX", "TX", "STO", "RCL", "SCAN", "SET TIME" or numeric keys. Generally the displays will then be reset to their initial states if the operating parameters are valid. An exception is the self test mode (see section 7.4)



Adjustment of receiver AF-amplifier gain. (Sound level of internal speaker, handset phone and headphone). Pressing one of the keys turns on the corresponding annunciator, which is turned off again when the key is released or when minimum or maximum sound level is reached.



Adjustment of receiver IF-amplifier gain when the AGC is switched OFF.



Switches ON/OFF the AGC (Automatic Gain Control). The annunciators indicate whether the AGC is ON or OFF. When the AGC is ON the receiver IF-amplifier gain is automatically adjusted and manual control disabled. When the AGC is switched OFF the receiver IF-amplifier gain is maintained on the level it had just before the AGC was switched OFF and manual control via the "SENSITIVITY" keys is enabled. When selecting a new receiver frequency the AGC should always be ON, to ensure that a suitable start level of IF-amplifier gain is set before the AGC is switched OFF for manual adjustment.



Selects AGC time constant, that is the rate at which gain is regulated. Annunciators indicate whether "AGC SLOW" or "AGC FAST" is selected. "AGC SLOW" is automatically selected when switching to the modes SSB, R3E or MCW. "AGC FAST" is automatically selected when switching to the modes AM, TELEX or CW. The settings selected by the system are assumed to give the best reception in the modes concerned but under special circumstances a better reception might be obtained by pressing "AGC FAST" if "AGC SLOW" were selected and vice versa. In the AM and the TELEX-mode only "AGC FAST" is possible.



Switches ON/OFF internal and external loudspeaker. Annunciator ON indicates loudspeaker(s) ON. If headphones are connected via the socket on the rear of the Control Unit, the internal loudspeaker is always switched OFF.



Increases receiver gain 10 dB by activating the RF-amplifier stage. Annunciator ON indicates RF-amplifier ON. The RF-amplifier may be used when the received signal is weak.



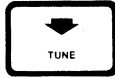
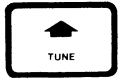
Decreases receiver gain 20 dB by inserting the antenna input attenuator. Annunciator ON indicates attenuator ON. The antenna attenuator may be used if the received signal is disturbed by strong out-of-band signals.



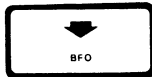
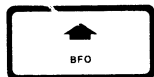
Switches ON/OFF Squelch function. Annunciator ON indicates Squelch ON. If the Squelch is ON a speech signal with a signal to noise ratio greater than a certain value is required to pass the signal through the receiver AF-amplifier. The Squelch is used to eliminate noise when there is no speech signal on the receiver frequency. The Squelch Board is optional. When not installed, pressing the key causes no action.



Selects frequency step in receiver tuning. An annunciator below one of the three right hand digits of the receiver display indicates the frequency step selected. 10 Hz, 100 Hz and 1000 Hz steps are possible.



Tuning of receiver frequency up or down in frequency steps selected by the "TUNE RATE" key (see section 4.1)



Adjustment of the BFO frequency down and up in CW mode. Receiver display shows BFO frequency when either of the keys are pressed.



Selects respective IF filters in CW and MCW mode. Annunciator ON indicates selected filter.



Selecting transmission of J3E and reception of J3E and R3E signals in USB (Upper Side Band). Annunciator ON indicates USB-mode selected.



Selecting transmission of J3E and reception of J3E and R3E signals in LSB (Lower Side Band). Annunciator ON indicates LSB-mode selected. If transmission of LSB is illegal and transmitter is ON, the transmitter display is flashing and transmitter function disabled.



Selecting transmission of H3E (Upper Side Band) and reception of H3E and A3E signals. Annunciator ON indicates AM mode selected. If transmission of H3E is illegal and transmitter is ON, the transmitter display is flashing and transmitter function disabled.



Selecting transmission of R3E and reception of R3E and J3E signals (Upper Side Band). Annunciator ON indicates R3E mode selected.



Selecting transmission and reception of Telex in F1B mode. Annunciator ON indicates Telex mode selected. The Telex function is optional.



Fast set up for 2182 kHz. Pressing this key will instantly change receiver and transmitter frequency to 2182 kHz, select AM (H3E) mode, select FULL POWER, and enable transmitter function (TX ON). The loudspeaker(s) and AGC are automatically switched ON and RF-AMP, ANT ATT and SQUELCH switched OFF. Antenna current is displayed when transmitting.



Fast set-up for 500 kHz. Pressing this key will instantly change receiver frequency to 500 kHz and select MCW (H2A) mode. The loudspeaker(s) and AGC are automatically switched ON and RFAMP, ANT ATT and SQUELCH switched OFF. IF FILTER keys are enabled and the intermediate type filter automatically selected.



Selecting transmission and reception of A1A morse telegraphy signals. Annunciator ON indicates CW-mode selected. If transmission of A1A is illegal and transmission is ON, the transmitter display is flashing and transmitter function disabled. IF FILTER keys are enabled and the intermediate type filter automatically selected. BFO is enabled and AGC is switched ON.



Selecting transmission and reception of H2A modulated morse telegraphy signals. Annunciator ON indicates MCW-mode selected. If transmission of H2A is illegal and transmission is ON, the transmitter display is flashing and transmitter disabled. IF FILTER keys are enabled and the intermediate type filter automatically selected. AGC is switched ON.



Activating Antenna Tuner. Pressing this key will start the automatic tuning procedure in the ATU (Antenna Tuning Unit). Tuning is performed in less than 1.5 sec. Pressing the handset key for the first time after changing transmitter frequency will also start the tuning procedure, and it is therefore not necessary to press "TX TUNE" in this case. "TX TUNE" is normally used when the frequency has been unchanged for some time and the antenna impedance has changed due to external circumstances (see section 4.1).



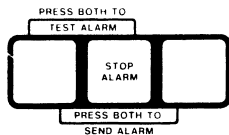
Selecting low transmitter output power (approx. 10 W PEP). Annunciator ON indicates LOW POWER selected.



Selecting medium transmitter output power (approx. 60 W PEP). Annunciator ON indicates MEDIUM POWER selected.



Selecting full transmitter output power (approx. 250 W PEP). Annunciator ON indicates FULL POWER selected.



Testing and transmitting the two-tone alarm signal. Press "STOP ALARM" and the left key simultaneously and keep pressed to test alarm. The alarm signal is heard in the loudspeaker, and transmitter keying is disabled. If the Dummy Load option is installed the alarm generator and the transmitter is tested on the built-in dummy load of the Antenna Tuning Unit. The Antenna Current Meter indicates current into the dummy load. The Output Power and Antenna Current annunciators are flashing to show that the transmitter is in the test mode. Test on dummy load cannot be performed on 2182 kHz.

Press the left and right keys simultaneously to send alarm. The alarm signal is heard in the loudspeaker and transmitted for 45 sec. on the selected frequency if the transmitter is ON. The alarm signal may be interrupted by pressing "STOP ALARM".

4.2.1 Transmitter Display In its initial state the transmitter display shows the transmitter frequency in kHz if TX is ON or the time of day in hours and minutes if TX is OFF. Time of day is indicated by a flashing time cursor (3rd digit). A steady time cursor indicates that entering or recalling of time has not yet been terminated. A flashing decimal point indicates that entering, storing or recalling of a transmitter frequency has not yet been terminated. Flashing digits indicate that the transmitter frequency and/or mode is unauthorized, i.e. the frequency is outside the specified range and/or not contained in the frequency PROM. The transmitter cannot be keyed if the transmitter display is flashing.

4.2.2 Receiver Display In its initial state the receiver display shows the receiver frequency in kHz. A flashing decimal point indicates that entering, storing or recalling of a receiver frequency or channel-number has not yet been terminated. Flashing digits indicate that the frequency or channel-number is outside the specified range.

4.2.3 Signal Strength meter Gives a relative indication of the signal strength in the received signal.

4.2.4 Output power/Antenna current meter Measures the antenna current during transmission on 2182 kHz and 500 kHz, as indicated by the antenna current annunciator. Gives a relative indication of the transmitter output power during transmission on other frequencies by measuring the output peak voltage/current, as indicated by the output power annunciator. A flashing meter indicates a fault in the Transceiver Unit - Antenna Tuning Unit communication.

4.2.5 Output power annunciator Also serves as a mismatch indicator on all frequencies. If the input SWR of the Antenna Tuning Unit exceeds 1:3 the output power annunciator starts flashing, indicating that tuning is required.

4.2.6 Reduced power annunciator If the temperature of the Power Amplifier heatsink and/or the Antenna Tuning Unit exceeds their maximum levels, the output power is reduced by 5 dB which is indicated by the reduced power annunciator. This may occur due to extreme environmental and/or working conditions.