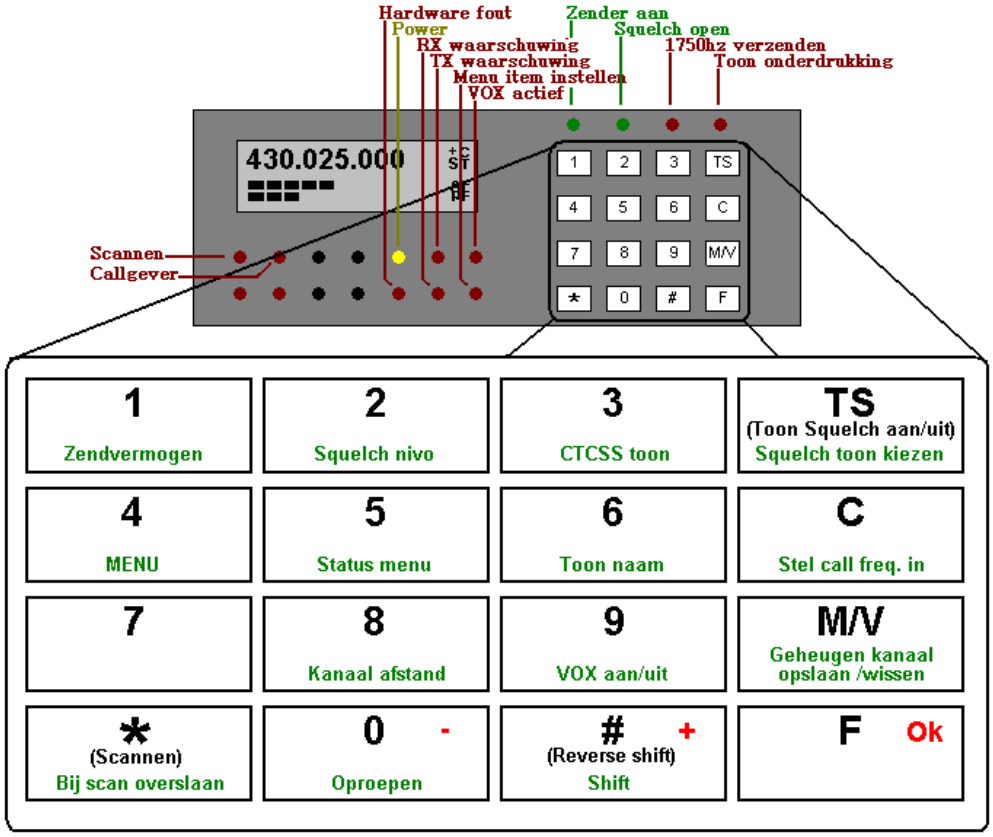
Usermanual

RS9044

70cm

Transceiver

Toetsen overzicht:



Mainfunctions:

Keys:	Function:
0 1 2 3 4 5 6 7 8 9	Enter channel, frequency or any other number.
*****	Scan
#	Reverse shift
C	Go to call-channel
M/V	Switch between VFO and memory
TS	Activate tone squelch (DTSS / 5-tone)
F	Choose second function

Second function:

Keys:	Function:
1	Set transmitterpower
2	Set squelch level
3	Select sub-tone (CTCSS)
4	Go to main menu
5	GO to status menu
6	Show name of memory channel
8	Set channel space for VFO
9	VOX on / off
*****	Lock out memory channel (skip when scanning)
0	Select call (5-tone)
#	Shift + / - / none
TS	Set tone squelch code
C	Delete call channel
M/V	Delete memory channel

After switching on the transceiver the selected channel or frequency is shown at the first line of the display. The second line shows both AF signal and RF signal level. This is the strart situation of the transceiver. When receiving an sel-call code, this code will be shown for 1 second at the second line.

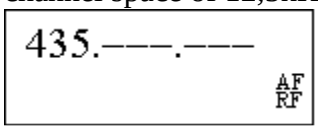
To select the second function of the keys, press the **F** key first. After pressing this key the text ‘Choose function’ appears on the display. The second function of the next key will be activated. To go back to the start situation, press the **F** key again.

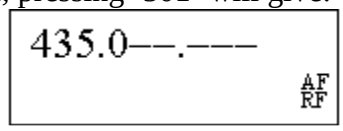
Software version 2.0 and later have the posibility to lock the keypad by pressing the **F** key for a second. To unlock the keypad, press **F** together with the **SCAN** key.

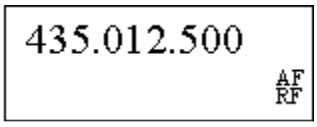
1 Selecting a frequency

The transeiver has three frequency modes, the **M/V** key is used to switch between **VCO** and **Memory**. The thirth mode is the call channel, this one is selectable by the **C** key.

- **VCO mode**
  In the VCO mode all frequencies at the chooses channel space (4) can be selected with the keypad or rotary encoder. De transceiver modifies the frequency to fit it in the channel space. To select 435.012.500, when using a channel space of 12,5kHz, pressing ‘501’ will give:







  If a channelspace of 25kHz is selected, the transceiver will change to 435.000.000 MHz

  The rotary encoder can also be used to step through the frequencies. Every step right will increase, every step left decreases the frequency by the value of the channel space.

- **Memory mode**
  A maximum of 100 memory channels can be stored in the transceiver (5). This mode recalls those pre-stored frequencies. It is possible to give the frequency a name of 23 characters. The memory channels can be selected by keypad or rotary encoder. An error-beep is given when entering an empty channel by the keypad.

- **Call channel mode**
  If a frequency has been stored in the call channel (6), this frequency can be selected by pressing the **C** key once. The advantage of the call-channel is the quick access to the most used frequency in the neighbourhood.

2 Selecting subtone (CTCSS)

It may be problem for some receivers to receive every signal. That's why, some receivers are using CTCSS, only transmitters which are transmitting a constant low frequency mixed with the normal modulation are coming through the squelch system.

The frequency of this tone is selectable as follows:

	Display:
- Press **'F'**	(Choose function)
- Press **'3'**	(CTCSS: **)

The frequency can be changed by the rotary encoder or by the keys **0** and **REV**. The lowest frequency is 67Hz en de highest 250.3Hz, between those 'None' to switch off the sub-tone.

3 Tone squelch

For some stations tone squelch is necessary for opening the squelch system. For DTSS for example is a number of DTMF tones are transmitted.

Activate:

The tonesquelch can be activated with the **TS** key, in this case the **BLOCK** led will burn. Thr transceiver transmits the selected code every time when the PTT button is pressed.

Select:

This code can be selected as follows:

	Display:
- Press **'F'**	(Choose function)
- Press **'TS'**	(TS:)

The numbers of the code are entered the same way as entering text. (See 1.10) The DTMF tones are be selected by pressing the **'1'** key, DTMF numbers are printed with a horizontal line on top of the number. Tones of the ZVEI standard are selected by pressing the **'2'** key. The number has to be moved with the rotary encoder, the number at the cursor position will be selected.

4 Choosing channelspace

	Display:
- Press **‘F’**	(Choose function)
- Press **‘8’**	(Raster: **)

The rotary encoder or the keys **0** and **REV** can be used to change the channelspace. Acknowledge with any other key.

5 Storing memory channels

A number of 100 memory channels can be stored. Storing a channel as follows:

	Display:
- Go to the VCO mode (key '**M/V**').	(43*.***.***)
- Choose the frequency and if necessary SHIFT and CTCSS.	
- Press **‘F’**	(Choose function)
- Press '**M/V**'.	(Store in: **)
- Choose a location with rotary encoder or keypad. When an arrow appears, this location is already in use. for an other frequency, this one will be overwritten.	(Store in: >**)
- Press '**F**' to acknowledge.	
- If necessary, enter a name. For enterin text, see §10.	(Name:)
- Press '**F**' again.	(Writing)

See §7 to switch between displaying name or frequency.

6 Storing the callchannel

It can be easy to switch to the most used frequency by pressing only the **‘C’** key once. Thi frequency has to be programmed as follows:

- Go to the VCO mode (key '**M/V**').	(43*.***.***)
- Choose the frequency and if necessary SHIFT and CTCSS.	
- Press **‘F’**	(Choose function)
- Press '**A**'.	(Call channel ?)
- Press '**F**' to acknowledge.	
- If necessary, enter a name. For enterin text, see §10.	(Name:)
- Press '**F**' again.	(Writing)

See §7 to switch between displaying name or frequency.

7 Displaying name / frequency

Every memory channel can have a name, the displaying of this name can be enabled and disabled as follows:

	Display:
- Press **'F'**	(Choose function)
- Press **'6'**	

8 Deleting an memory channel

	Display:
- Go to the momory mode (key '**M/V**')	(** ******)
- Choose the channel to delete	
- Press **'F'**	(Choose function)
- Press **'M/V'**	(Delete channel?)
- Press **'F'**	(Writing)

9 Deleting the call channel

	Display:
- Go to the call channel (key '**A**')	(A ******)
- Press **'F'**	(Choose function)
- Press **'A'**	(Delete call-ch?)
- Press **'F'**	(Writing)

10 Entering text

In some cases it is possible to enter text, the keypad is to small for all characters so entering text is not very easy.

The horizontal line under the text area (cursor) indicates the character to change or deleted. The cursor can be moved with the rotary encoder.

The transceiver has 224 characters, for these characters the keys 1-7 are used, this means 224:7 = 23 characters each. By pressing and holding one of those keys, the rotary encoder can be used to move the character group.

The key 8 is used for deleting a character, de text moves back just like the delete key in a wordprocessor. The key 9 is for inserting a space.

Acknowledge with the key **'F'**.

11 Scan

Scanning is posible is **Memory** and **VFO** mode:

Scanning all frequencies:
- Go to the VFO mode with key **'M/V'**
- Press **'SCAN'**

Scanning memory channels:
- Go to the memory mode with key **'M/V'**
- Press **'SCAN'**

Press any other key to stop scanning, while scanning the light NMT burns.

When the transceiver is waiting on a channel, scanning can be continued by pressing 'SCAN' again.

12 Skip Memory channels when scanning

It is posible skip some memory channels when scanning.

Display:

- Go to the memory mode with key **'M/V'** (** 43***)
- Choose the channel to skip
- Press **'F'** (Choose function)
- Press **'SCAN'**

The little cross behind the channelnumber indicates the channel will be skipped when scanning.

To undo this, the same has to be done. The little cross wil disappear.

13 Activating VOX

The VOX can be switched on and off as follows:

Display:

- Press **'F'** (Choose function)
- Press **'9'**

Is the VOX is enabled, the XO led will burn.

14 Transmitterpower

The output power is depends on:

- The value selected in software
- The potmeter at the front of the transceiver
- VSWR
- Temperature

Power setting in software:

	Display:
- Press **'F'**	(Choose function)
- Press **'1'**	

The power can be changed by the rotary encoder or the keys **0** and **REV**.

Acknowledge with any other key.

The actual power is the smallest of the potmeter and the value selected in the software. **To use maximum power both potmeter and software must have the highest value.** The transceiver reduces power if a bad VSWR is detected or the power amplifier temperature is higher than 65 degrees. In this case an exclamation mark appears in the staus menu behind the output power. If the VSWR is to bad, the red kight TX will burn.

15 Activating repeater shift

The default setting of the width of the shift is 1.6MHz, this can be changed in the MENU (See §18).

To enable or disable the shift:

	Display:
- Press **'F'**	(Choose function)
- Press **'REV'**	

Three posibilities:

- Shift disabled	(43*.***.***)
- Shift negative (Transmitfrequency 1.6MHz lower)	(43*.***.*** $^{-}_{S}$)
- Shift positive (Transmitfrequency 1.6MHz higher)	(43*.***.*** $^{+}_{S}$)

16 Reverse shift

The reverse dhift in meant to listen temporary to the input of a relais station. The shift will be inverted.

The **reverse** shift can be switched on and off by pressing the **'REV'** key, without pressing the**'F'** key first. When anabled, the 'S' in the display will be replaced by a 'R'.

17 Changing squelch level

Display:

- Press **'F'** (Choose function)
- Press **'2'**

The squelch level can be changed by the rotary encoder or the keys **0** and **REV**.

The squelch reacts in the noiselevel of the received signal, this means all weak stations with a good S/N relation will also open the squelch system. To receive local stations only, the selected squelch level must be between 2/3 and the highest level. In this case the squelch react on both S/N level and signal strength.

The squelch level for every transceiver is very different, therefore the switching-point has to be calibrated by the potmeter on the front near the RX LINE connector. For the best result the software must be set to a level of 1/4 to 1/3 before setting the potmeter.

18 The MENU

The transceiver has only 16 keys and to use all functions, some functions are divided over a MENU. Those functions are selectable by the rotary encoder or by the keys **0** and **REV**.

The settings of the functions can be changed by pressing the **'F'** key. In this situation the red led **'SR'** will burn.

The settings which need text or a number, have to be modified by pressing the **'F'** key also, but must be acknowledged by pressing an unused key or the **'F'** key.

The menu must be selected as follows:

- Press **'F'** (Choose function)
- Press **'4'** (xxxxxx MENU)

To organise the menu, most items are divided over submenu's. Those submenu's are accessable by the main menu and have to be selected by pressing the **'F'** key. To return from a submenu's or the main menu, press an unused key.

The menu items are as follows:	The posibilities
- ***Shift*** This is the width of the shift of relais stations. The value can be changed by the rotary encoder or the keypad.	****** kHz
- ***Duplex*** Allows receiving and transmitting at the same time, Provided that the shift is more than 1MHz. At repeat, the transceiver behaves as a relais station.	**Off** / **On** / **On (repeat)**
- ***TX at SQ*** At 'imposible' the transmitter will not be on air when squelch is open. **The setting 'Duplex' uverrules this setting.**	**Posible** / **Imposible**
- ***TX STOP*** This is the maximum transmit time. 0 = None The value can be changed by the rotary encoder or the keypad.	**** sec
- ***VFO width*** VFO width .	**430-440 /** **400-500**
- ***RF out*** This is to activate the test output at the SUB-D port.	**Off** / **On**
- ***Scan mode*** Here can be selected how to behave while scanning. scannen. Wait silence: wait at signal until signal disappears for a second. Wait at busy: wait a second at signal. Until signal: stop scanning at signal.	**Wait silence** / **Wait at busy**/ **Until signal**
- ***Scan mode*** At 'carrier' the transceiver checks signal strength, this is faster. 'Squelch' is better for weak signals.	**Carrier** / **Squelch**
- ***Scan lowlimit*** A range can be defined when scanning in VFO mode. The lowest frequency of the part to scan is set here	**43*.*** **
- ***Scanhighlimit*** A range can be defined when scanning in VFO mode. The highest frequency of the part to scan is set here	**43*.*** **

- ***Receiver*** — **Best S/N**, **Force RXA**, **Force RXB**
  For systems with diversity option installed this setting enables the diversity or switches to one receiver.

- ***Squelch*** — **Submenu →**

  - ***Delay*** — ****ms**
    To eliminate short signals which might open the open response of the squelch can be delayed

  - ***Averaging – Open*** — *
    Software averaging of the S/N ratio. This setting is the averaging for improving signal quality

  - ***Averaging – Close*** — *
    Software averaging of the S/N ratio. This setting is the averaging for deteriorating signal quality

  - ***Hysteresis*** — *
    This is the hysteresis of the squelch

  - ***CTCSS hyst – Nok>Ok*** — *
    When a FX3*5 is installed, the lock output is monitored by the CPU. The minimum 'valid time' to open the squelch is set here.

  - ***CTCSS hyst – Ok>Nok*** — *
    The minimum 'in valid time' to close the squelch is set here.

- ***Audio*** — **Submenu →**

  - ***Compandors*** — **Off** / **On**
    This setting is to enable the dynamic companders. For the receiver this is a expander, for the microphone a dynamic compressor.

  - ***Compandors - Duplex*** — **Off** / **On**
    This setting is used when working in duplex mode. Both TX and RX companders are enabled the same time.

  - ***Audio-out*** — **Normal / Switch through**
    The LF input can be switched to the transmitter or to the LF output.

- ***Suppress*** — **Tones>500Hz** / **Only 1750Hz**/ **Never**
  Beep tonen can be suppressed by enableing this setting.

- ***Beep*** — **On** / **Off**
  Keyboardbeep.

- ***Rogerbeep*** — ***Hz — **Off**
  This is the frequency of the rogerbeep. Entering 00 will switch off the rogerbeep. The value can be changed by the rotary encoder or the keypad.

- ***Rogerbeep*** — ******* mS
  This is the length of the rogerbeep. The value can be changed by the rotary encoder or the keypad.

- ***DTMF tones*** — ******* mS
  This is the length of the DTMF tones. The value can be changed by the rotary encoder or the keypad.

- ***ZVEI tonen*** — *** mS
  This is the length of the ZVEI tones used for sel-call 5-toon oproep. The value can be changed by the rotary encoder or the keypad.

- ***TX burst*** — ***Hz — **Off**
  By pressing the PTT key twice, a toneburst will be transmitted. The frequency is selectable or can be switched off by entering 00.

- ***Calltutor*** — **Submenu →**

  - ***Calltutor*** — **On** / **On (hold TX)** / **Off**
    It is posible to transmit a morse text of max. 32 characters. At ‘hold TX’ the text will be finished before switching off the transmitter.

  - ***After call*** — **Off** / **On**
    Sending the call-sign after a selective call.

  - ***Call*** — <text line>
    This is the callsign to transmit with the calltutor. For entering text see §10.

- ***Beacon*** ******** sec

  It is posible to give a callsign every * second. It is Used as a beacon. The value can be changed by the rotary encoder or the keypad.

- ***Beacon Call*** <text line>

  This is the callsign for the baken. See §10.

- ***Calltutor*** Volume: *******

  This is the volume of the calltutor (1-4)
  This value is changeble with the rotary encoder.

- ***Calltutor*** Speed: *******

  This is the speed of the calltutor (0-15).
  This value is changeble with the rotary encoder.

- ***Calltutor*** **TX Only / TX & AF out / FIA**

  This is for monitoring the calltutor at the receiver. If there is no solution to use the standard CPU tone, FIA could be used as well but this might be conflicting . **'TX Only' is recommended.**

- ***Calltutor*** After TX: ****** sec

  The callsign will be given *** seconds after Switching on the transmitter. The value can be changed by the rotary encoder or the keypad.

- ***Calltutor*** Every: ******* sec

  The callsign will be given every ******* secondens. The value can be changed by the rotary encoder or the keypad.

- ***Calltutor*** Reset: ******* sec

  The callsign will be active again after the transmitter has been switched off for more than ******* seconds. The value can be changed by the rotary encoder or the keypad.

- ***Calltutor*** **After TX / Just in time**

  When in repeater mode, the transceiver will give the callsign after the squelch closes and 50% is the maximum interval is reached

- ***VOX*** **Submenu →**

  - ***VOX*** **Normal** /
    At 'difference' the LF signal of the receiver is substracted from the microphone signal. To prevent transmitting when the receiver produces noise. **LF difference**

  - ***VOX*** Limit: ******* V
    This is the level of the input signal to activate the VOX. The value can be changed by the rotary encoder or the keypad.

  - ***VOX*** On after: ****** mS
    When the input is higher than the selected limit for longer than ******* miliseconds, the transmitter will be switched on.

  - ***VOX*** Off after: ******mS
    When the input is lower than the selected limit for longer than ******* miliseconds, the transmitter will be switched on.

- ***User*** **Submenu →**

  - ***LCD light*** Off after: ******* S
    The LCD light will be switched off ******* seconds after the last action.

  - ***My number*** ***
    This is the personal sel-call number. The transceiver will ring when receiving this code.

  - ***Answer*** ***
    When receiving the own sel-call code, the transceiver can aswer back with this code.

  - ***Answer back*** **Yes / No**
    To enable the answer back function.

  - ***Meter*** **Lines** /
    This is for the signal meter **Dots**

  - ***Tonecode*** **Show /**
    To display the sel-call code. **Don't show**

- ***Tone sql*** ***mS

  When tonesquelch is active and a legal code has been received, the squelch will remain unlocked for *** ms.

- ***Rotary dail*** Acc.: *****

  This is the accelleration for the rotary encoder. The value can be changed by the rotary encoder or the keypad.

- ***Keypad*** **Repeat /**

  When holding a key, this key can be reapeated. **Once**

- ***Settings*** **Save** /

  At 'save' all settings are stored when switching off the transceiver. At 'do not save' the settings can be stored munaully. When switching on the transceiver, the last settings will be used. **Do not save**

- ***Settings*** **Save now**

  With this item, the settings can be stored manually.

- ***Freq band*** **UHF 400-500**

  The working band must be specified here, depends on which type of Radiosystem is used **VHF 100-200** **UHF 1200-1300**

- ***PLL Fref*** ****.***.000kHz**

  This is the reference frequency of the PLL. The value can be changed by the rotary encoder or the keypad.

- ***Offset (1)*** **5.00kHz > ***

  For a bad reference oscillator, the frequency can be shifted. This is for 5, 10, 15 and 20kHz rasters.

- ***Offset (1)*** **6.25kHz > ***

  For a bad reference oscillator, the frequency can be shifted. This is for 6.25, 12.5, 18.75 en 25kHz.

- ***TX Pulling*** **On** /

  When receiving, the transmitter PLL can be pulled away some channels. Switch to ‘On’ when the transmitter PLL interferences the receiver **Off**

- ***<Language>*** **Nederlands**

  This item is for selecting the language **English** **Deutsch**

- ***Repeater*** **Submenu →**

- ***Repeater*** **Hold: **ms**
  When '**repeat**' is selected at item 'duplex', this will be the hold-time.

- ***SQ Roger*** **After**: *****mS**
  In repeater mode, the transceiver can give a beep when the squelch is closed again for ***mS.

- ***SQ Roger*** ***Hz
  This is the frequency of the rogerbeep. Entering 00 will switch off the rogerbeep. The value can be changed by the rotary encoder or the keypad. **Off**

- ***SQ Roger*** ******* mS
  This is the length of the rogerbeep. The value can be changed by the rotary encoder or the keypad.

- ***SQ Time*** **After: ***s**
  This is the maximum time the squelch may be open. 20 seconds before 'killing' the squelch a warning tone will be send.

- ***SQ Time*** **Not for CTCSS**
  The squelch killer may be overruled by the reception of a CTCSS tone. **For CTCSS too**

- ***CTCSS RX*** **Tone: ***Hz**
  It is possible to connect a CTCSS decoder to the transceiver. **None**

- ***CTCSS RX*** **Normal**
  CTCSS behavior. 'Normal' will only open the squelch when tone is valid *and* analog squelch is open. **Opens squelch**
  'Opens squelch' will overrule the analog squelch, but there is always a valid tone needed. **Optional**
  'Optional' will overrule the analog squelch and normal stays functional.

- ***SQL Lock*** **TS and CTCSS**
  When using the toneslot, it can be overruled by the CTCSS or work together, both needed to open. **TS or CTCSS**

- ***CTCSS gen*** **Always**
  When to transmit CTCSS tones (Function 3) **When sq open**

- ***Serial*** **Submenu →**

  - ***Serial*** **On**
    Enable or disable remote control **Off**

  - ***Own ID:*** *
    This is the identification of the unit over the bus

- ***Status*** **Diagnose**
  When one of the two error leds burns (RX/TX), in this item is shown what error occurs.

19 Status menu

In this status menu are all values of the ADC converters visible. With the rotary encoder or the keys **0** and **REV** can be switched between aal the values, with any other key the transceiver returns to normal situation.

The status menu is accessable as follows:

	Display:
- Press **'F'**	(Choose function)
- Press **'5'**	(****** STAT)

The following values are visible:

- ***Temp*** ******* C
  Temperature of the power amplifier

- ***Supply 1*** ****** V ****** V
  Those are the 5 V and 10 V power supply.

- ***Supply 2*** ****** V ****** V
  Those are the 14V and 24V pwer supply.

- ***RX VCO sp*** ****** V
  This is the VCO voltage of from the receiver PLL.

- ***RX lokaal*** ****** V ****** V
  Left is the signal strength of the local oscillator.
  Right is the strength after the amplifier, at the mixer.

- ***RX signal*** ****** dB
  This is the signalstrength of the RF signal.

- ***RX S/N*** ****** dB
  This is the signal/noise relation of the LF signal from the receiver.

- ***AFC*** - -------|----- +
  Here is shown the difference between the receiver frequency and the frequency of the opposit station.
  The middle is 0, echt point is 1kHz.

- ***RX LF*** ****** V ****** V
  Left is the audio-level from the discriminator
  Right is the audio-level at the audio-output.

- ***TX VCO sp*** ** V
  This is the VCO voltage of from the transmitter PLL.

- ***RX driver*** ** V ** W
  Left is the signal strength of the transmitter oscillator
  Right is the output power of the driver.

- ***Amlifier*** ** W ** W
  Left the ouput power of the power amplifier
  Right the reflected power of the antenna.

- ***TX LF*** ** V ** V
  Left is the audio level at the audio input
  Right is the sudio level at the modulator.

- ***-SUB-D P3*** ** V
  This is the voltage at P3 of the SUB-D at the back.
  This input is not used for amateur use.

- ***-AFCB*** ** V
  Maybe some transceivers have two receivers, this is the
  AFC voltage of the second transceiver.

- ***-LOB*** ** V
  This is the input voltage of the mixer of the second receiver.

The following values are decoded in software:

- ***RX tone*** ** Hz
  This is the frequency of the received signal. When receiving
  a constant frequency it will be recognised as a tone, an arrow
  will appear.

- ***ZVEI buff*** ***
  This is the buffer of receiving selective call tones.

- ***ZVEI RX*** ***
  This is the last received legal ZVEI code.

20 Selective call

Ten different tone-codes with name can be stored in the transceiver for sel-call and DTMF.

Call:

	Display:
- Press **'F'**	(Choose function)
- Press **'0'**	(Call:)
- Choose the person to call with rotary encoder or keypad	
- Press **'#'**	

Storing codes:

	Display:
- Press **'F'**	(Choose function)
- Press **'0'**	(Call:)
- Choose the person to call with rotary encoder or keypad	
- Press **'F'**	(Name:)
- Enter a name see 1.10	
- Press **'F'** to acknowlegde	(Nr.)
- Enter the tone code	
- Press **'F'** to acknowledge	(Writing)

The**'F'** key is used to acknowledge, any other key to cancel.

The numbers of the code are entered the same way as entering text. (See 1.10) The DTMF tones are be selected by pressing the **'1'** key, DTMF numbers are printed with a horizontal line on top of the number. Tones of the ZVEI standard are selected by pressing the **'2'** key. The number has to be moved with the rotary encoder, the number at the cursor position will be selected.