FoxRex 3500

ARDF Receiver 3.5MHz

RigExpert

**Made in Ukraine**

User's manual

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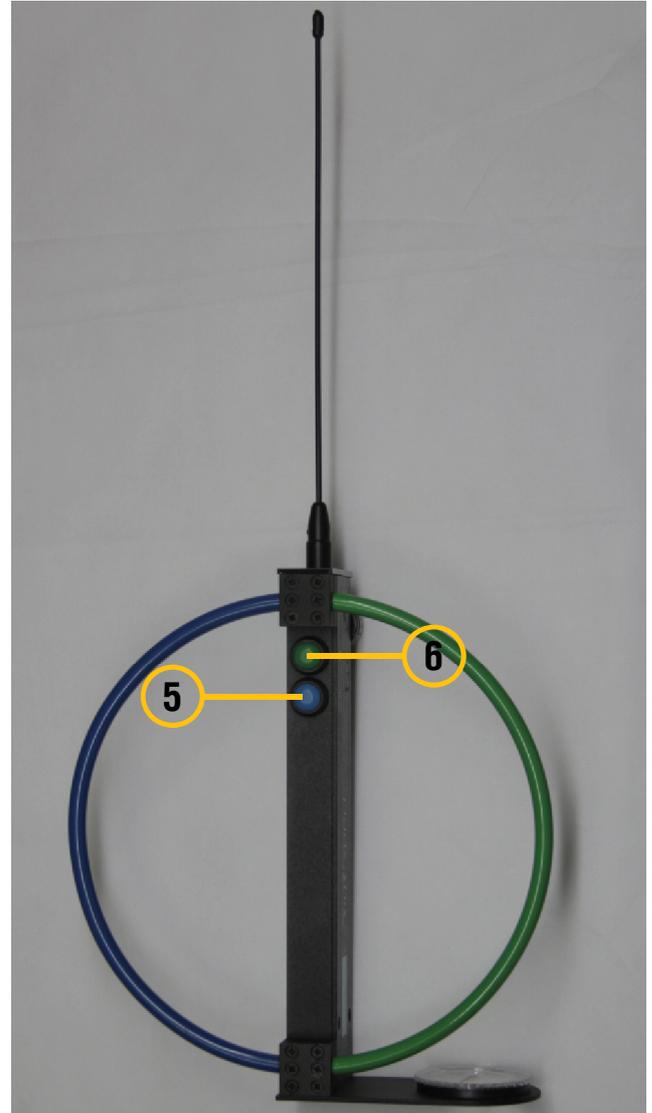
5. Press for maximum towards blue side.
6. Press for maximum towards green side.
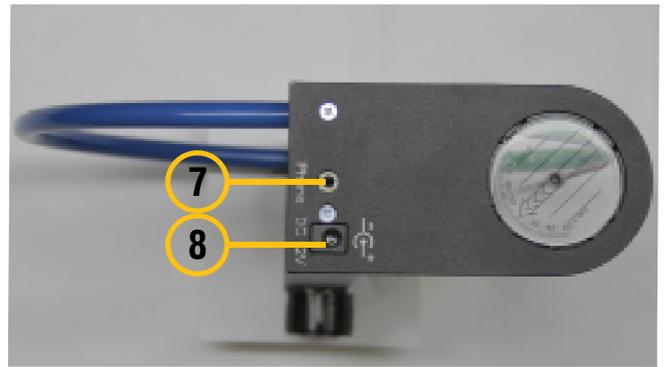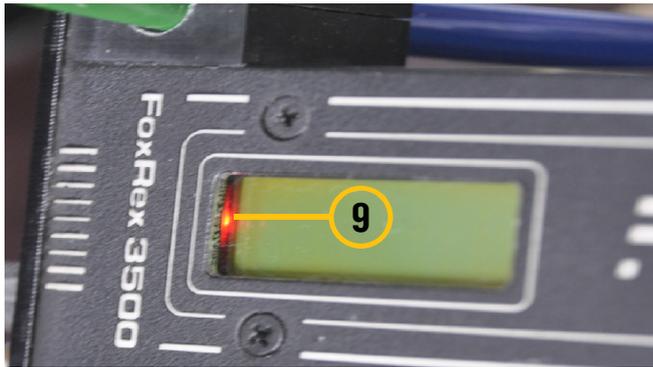
7. Headphones jack.
8. Battery charger jack.
9. Battery charge indicator.

Specifications

1. Frequency range		3,490-3,660 MHz
2. Sensitivity, (S+N)/N=10dB		H=70 na/m
3. Selectivity: -6dB		1,3 kHz
-20dB		4 kHz
-40dB		8 kHz
4. Image rejection		40 dB min
5. Attenuator range		110 dB, in 5dB step
6. Charger power supply voltage		12 V
7. Charge current		250 mA max
8. Battery life		40 hours min
9. Weight		400 g
10. Recommended Headphone		Dynamic 2 x 32 Ω or higher, 3.5 mm

Try it out!

Whether you are an experienced foxhunter or new to this sport: you will need a little time to get used to your new receiver. Go to a park or forest, set up a fox, play with your receiver while approaching the fox, and learn how it interacts with you. Have fun!

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Charging the battery

Before you start operating the device, connect a charger as shown in the figure and charge the battery. While charging, the indicator's light is steady and later starts blinking, then finally goes off. When the indicator starts blinking or goes off, the battery is charged, and the charger may be disconnected. The battery voltage is displayed when you enter the Main menu, see page 13. The voltage of the fully charged battery is about 8.4 Volts. The battery should be recharged when the voltage has fallen to 7.0 Volts (or anytime earlier). At 6.5 Volts the 'Low Battery Alarm' will sound every 10 Minutes. When it sounds for the first time, you will have enough power left for more than 2 hours of operation. At 6.0 Volts the Receiver will turn off.
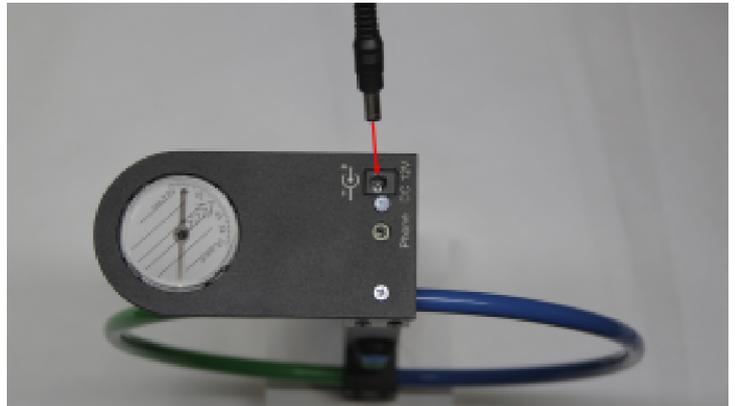
Installing the whip antenna

Screw the whip antenna into the stud on top of the receiver as shown in the picture.
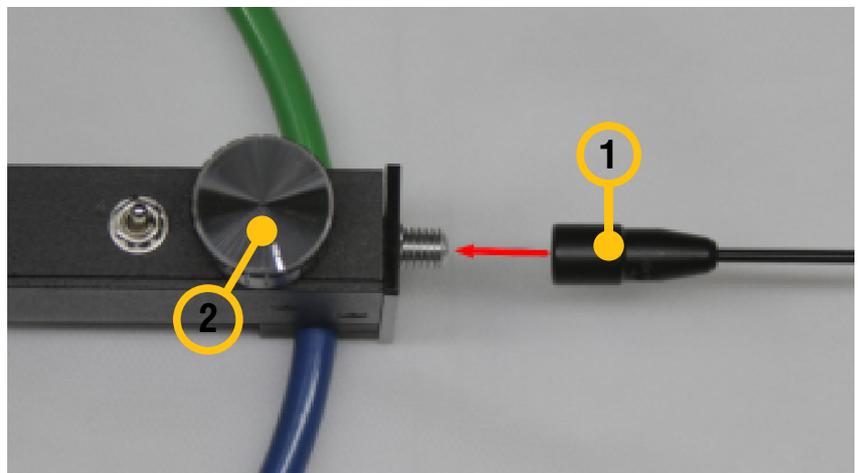
1. Antenna
2. Receiver

Switching the receiver on/off
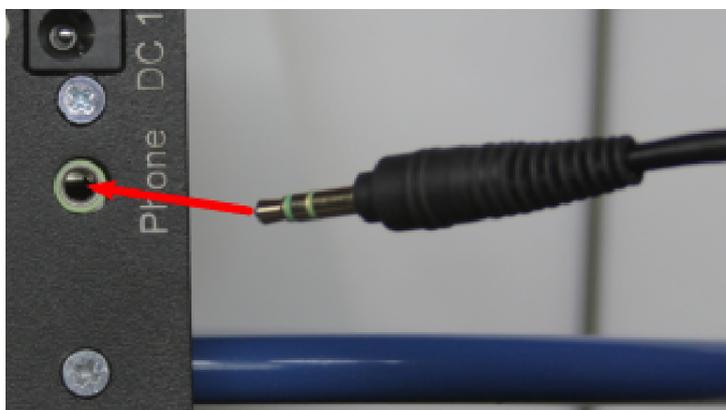
To turn the receiver on, insert the 3.5 mm headphone plug into the jack at the bottom of the receiver. It is recommended to turn on the receiver right at the start. At this moment the foxes' synchronization timer starts working and no further adjustment is required. To turn the receiver off, disconnect the headphones and push the Encoder for several seconds until the display goes off.

Receiver's main operating mode

Immediately after it is turned on, the receiver is in the main operating mode. The current fox number, current frequency, time left for this fox, and estimated distance to this fox are shown on the display. The signal meter scale in the lower part of the display indicates the volume of the signal received.
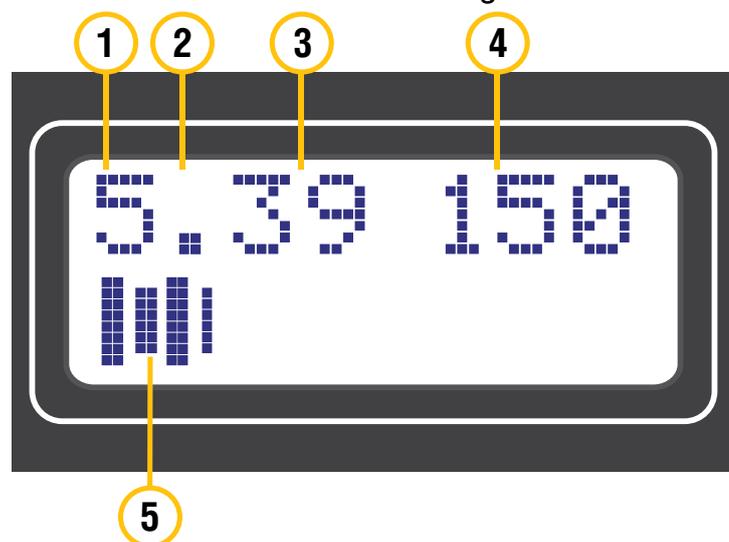
1. Number of the current fox
2. Current frequency, number of points 1-4.
3. Time left for current fox.
4. Estimated distance to the "fox" or attenuation, if the estimation is turned off. See page 15.
5. The received audible signal volume meter.
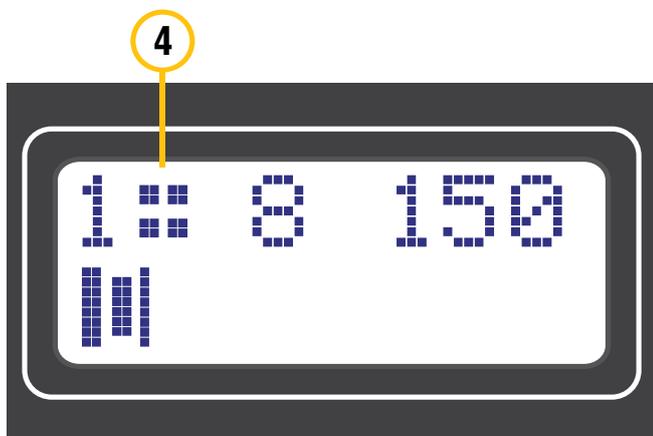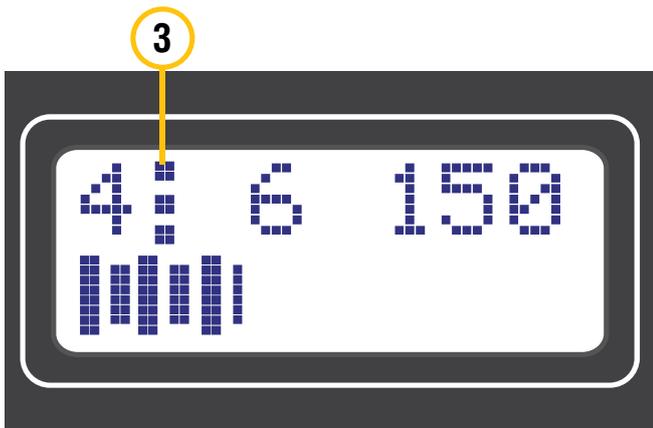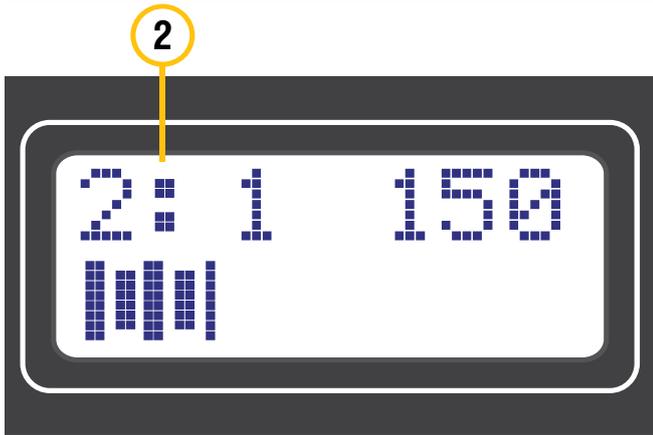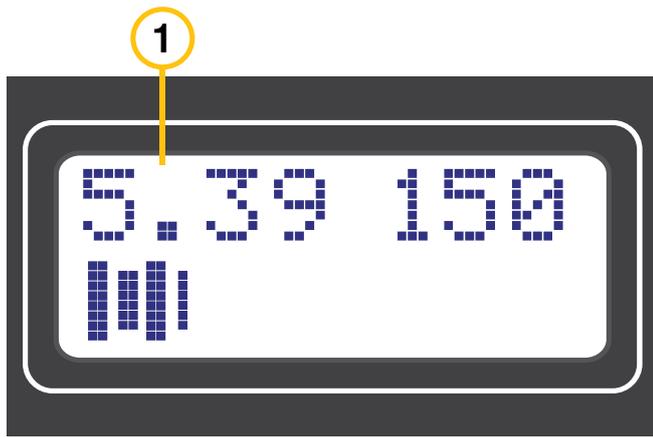
Switching frequencies

The receiver's memory can store up to 4 operating frequencies. To switch from one to another, briefly double-press the rotating encoder. The number of the frequency used currently is indicated by the number of points from 1 to 4. Frequency values are set in the receiver's main menu. See page 12. By pressing and turning the rotating encoder, the operating frequency can be precisely fine-tuned in 0.1 kHz steps. Once released, the value is stored in the receiver's memory.

1. Frequency 1 symbol.
2. Frequency 2 symbol.
3. Frequency 3 symbol.
4. Frequency 4 symbol.
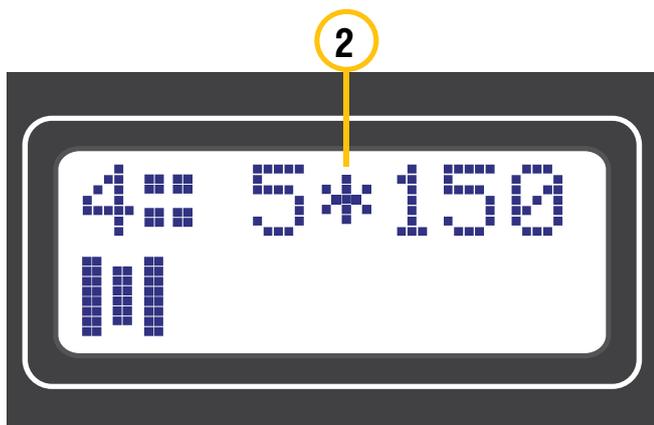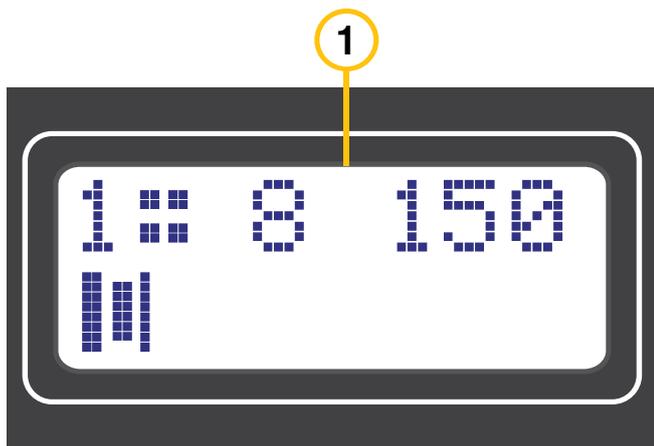
1. Automatic attenuator ON .
2. Automatic attenuator OFF.

Automatic attenuator

The receiver's automatic attenuator reduces the sensitivity in 5 dB steps when the S-Meter reaches full-scale. You hear a double-tone. When the signal gets weaker, you must open the attenuator manually by clicking the Switch to the Attenuator position one or several times, or by left-turning the Encoder. The distance estimation is based on the current attenuator setting. In special situations, e.g. weak signal + thunderstorm nearby, it can be necessary to turn off the automatic attenuator. It is turned off (and back on) by holding the Switch in the Attenuator position for several seconds. A star symbol will appear in the display. Now you have to set the attenuator manually by turning the Encoder.
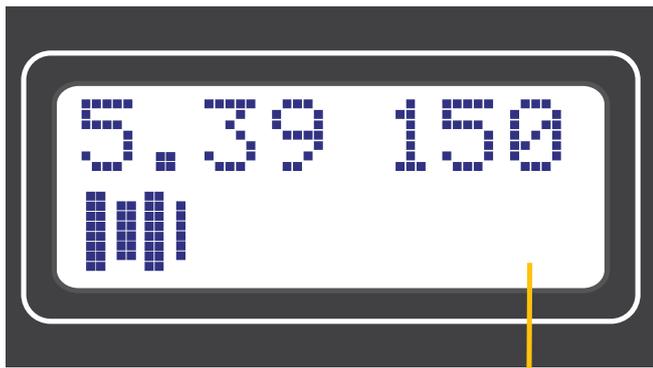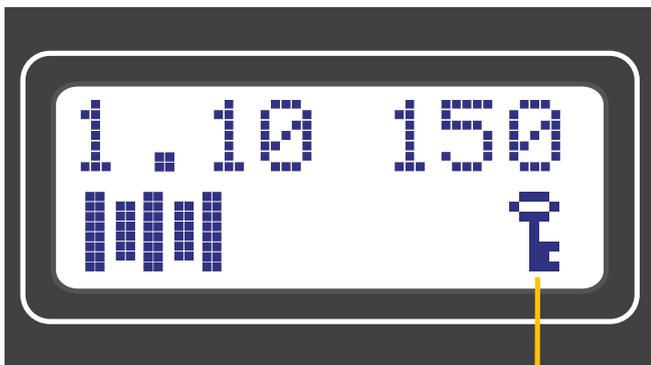
Locking the Receiver

By locking the receiver you can avoid the risk of accidentally getting into the depth of the menus described below in the heat of a hunt. Hold the Switch in the Attenuator position and push the Encoder for several seconds to lock and unlock. A key symbol in the display indicates the Locked state. When locked, all operations described above are still available, except turning off the automatic attenuator, and all operations described below are blocked.

1. No Lock.
2. Locked.
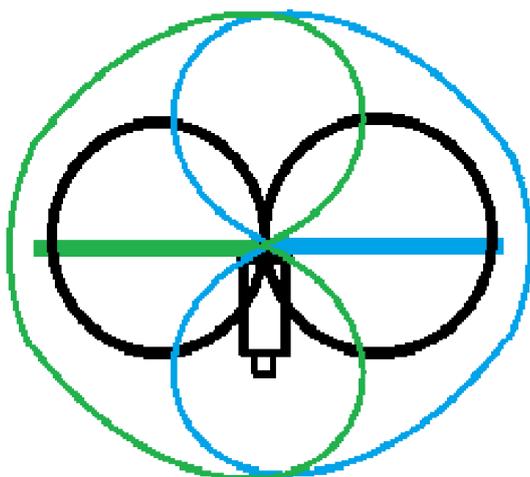
Where is the fox

The receiver's antenna system supports three directional patterns, controlled by the blue and green Button. The basic figure-8 pattern (black) is used to find the precise direction to the fox by rotating the receiver to the signal null. This is very sharp, but points in two directions – forward and backward. Turn the receiver 90° and press the blue Button to get the blue cardioid pattern. If the signal gets louder, the blue side of the antenna points to the fox. Else try the green Button.

To enter the main menu set the Switch to Menu. In the main menu you can set up your receiver's operating frequencies, or select one of four additional settings: Memories for various competitions (Classic, Sprint, Foxoring, etc.), restart the clock at 0:00:00, synchronize the fox timer, or enter the setup menu. Select a menu item by turning the Encoder. To leave the main menu switch back to Operate.

Frequency setup

To change the stored frequencies, select the 'Change' menu item and click the Encoder. Set the frequency in 1 kHz steps by turning the Encoder, in 100 Hz steps by pushing+turning. Click the Encoder to go to the next frequency. The number of frequencies is selected in the settings menu and can be from 1 to 4, see page 16.

Selecting a memory

There are at least three very different styles of 80m foxhunts: Classic, Sprint and Foxoring. Each requires a very different setup of the receiver. Therefore the receiver stores 6 complete settings in 6 Memories. This includes all parameters set in the setup menu and all frequencies. The Memories have names, e.g. "Classic", "Sprint", Etc. To go to a different Memory, select the 'Memory' menu item and push+turn the Encoder. To check, which Memory is active, switch briefly from Operate to Menu and back. You can change the names of the Memories in the calibration menu, see page 23.
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When entering the Main menu the display will briefly show the current frequency, the runtime since power-on in the format h:mm, and the battery voltage in Volts.

```
3580.2
0:06  7.8
```

Restarting the clock

The receiver's internal clock counts the time since power-on. In most cases this will be at your start signal, and then the clock shows the elapsed time since your start. You can restart the clock to 0:00:00 by selecting the menu item 'Clk-Start' and clicking the Encoder.

```
ClkStart
0:01:42
```

Reseting the fox timer

The fox timer reset mode is accessed by rotating the encoder until "TmrStart" appears. The bottom line shows the number of the current fox and the time left for this fox. By pressing briefly the rotating encoder at the moment the fox starts transmitting, the time is reset to the value of the fox's transmittance time and the count down begins. Press and turn the rotating encoder to select the number of the current fox. The best way to synchronize the fox timer is to turn on the receiver exactly at the moment a sportsman you start hunting and the first fox starts transmitting. In this case, no additional actions are required.

```
TmrStart
F 2    9s
```

Enter the setup menu

To enter the setup menu, select the main menu item 'Setup-menu' and click the Encoder. To leave the menu, switch to Operate.
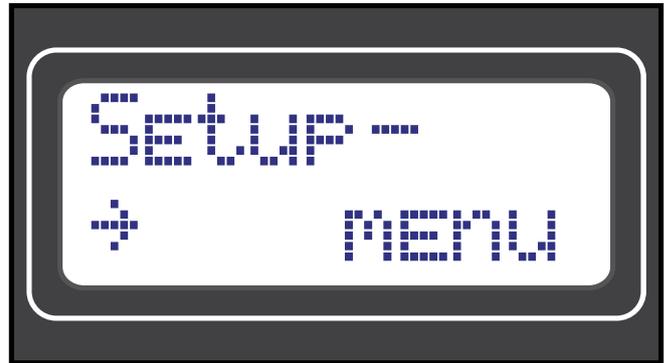
In the setup menu you can change the receiver's main operating parameters. They are: number of foxes, fox transmit time, fox output power, number of frequencies, end-of transmission-warning time, Acoustic S-Meter mode, and proximity-to-fox-alarm. All settings in this menu should be done before you go to the start. Select a menu item by turning the Encoder. If the receiver is new for you, use the 'recommended settings'. To leave the setup menu switch to Operate.

Fox output power

The approximate fox output power is required for the distance estimation. Select menu item 'PFox' then push+turn the Encoder to set the power in 5 dB steps between 30 nW and 30W. In addition you can select 'dB only'. In this

case the display shows the current attenuation in dB instead of the distance. This mode is not recommended for normal operation.The display shows the estimated distance in the upper right corner. If you know your distance to the fox, like in a 'model event', you can set 'PFox' so that you get the expected distance reading. Recommended setting: '1W' for Classic and Sprint, '0.1 µW' for Foxoring.

Number of frequencies

To set the number of frequencies in use select menu item 'N Freq' and push+turn the Encoder to select 1 to 4. In addition there are two advanced modes. In mode '12**A3' a double-click of the Encoder switches between F1 and F2, while a double-click with the Switch in the Attenuator position switches to F3. In mode '1x2**A3' in addition you can teach the receiver for each of the foxes, whether it is on F1 or F2. It will then switch back and forth automatically. These advanced modes can be used for the Czech style of fox hunting, where two sets of foxes transmit on two different frequencies and the homing beacon is on a third frequency. Don't use the advanced modes unless you are an experienced user. Recommended setting: '2' for Classic or Foxoring, '4' for Sprint.
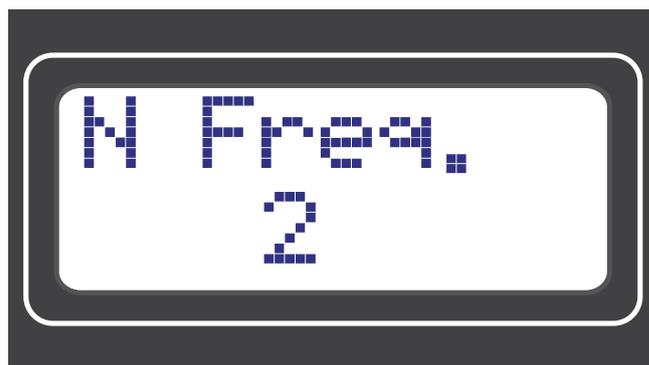
End of transmission alarm

The receiver gives an acoustic warning N seconds before the end of transmission of each fox. To set this time select menu item 'T Alarm' and push+turn the Encoder to set the time from 1 to 30 seconds or 'Off'. Recommended setting: '12' Seconds for Classic, 'Off' for Sprint and Foxoring.

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Acoustic S-Meter

Select the menu item 'AcousSM' and push+turn the Encoder to select one of the following three modes: 'Off', 'F/B-Zoom' or 'Maximum'. The 'F/B-Zoom' makes the forward/backward distinction easier. When the blue or green Button is pressed the receiver compares the signal strength before and after pressing the Button. Only if the signal gets stronger, a tone is generated. The bigger the increase, the higher the tone's frequency. When you hear this tone, the loop side corresponding to the pressed Button is looking at the fox. The 'Maximum' mode is useful, if you use the receiver most of the time in maximum mode with one of the Buttons pressed, for instance during a Foxoring. In this mode, when one of the Buttons is pressed, you will hear a synthetic tone. Its frequency goes up with the signal level, which makes finding the maximum easier. Recommended setting: 'F/B-Zoom' for Classic or Sprint, 'Off' for Foxoring.

Proximity to fox alarm

This feature generates a tone signal when you get near a fox. A low beep will sound every 4 seconds when you reach the set distance. As the signal strength increases this will become a double and then triple beep. Select the menu item 'NearTone' and push+turn the Encoder to select the distance for the single/triple tone warning from 300/50m to 20/2m, or select 'Off'. Recommended setting: 'Off'.

Number of foxes

Select the menu item 'N Foxes' and push+turn the Encoder to select the number of foxes from 2 to 10 or 'Foxoring'. If foxoring is selected, the main display shows the clock instead of the fox timer. Recommended setting: '5' for Classic and Sprint, 'Foxoring' for Foxoring.

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Fox transmission period

The length of each foxes transmission depends on the type of contest. Select the menu item 'T Fox' and push+turn the Encoder to set the transmission period. There are two 'T Fox' menu items. In the first you can set the time in seconds from 1 to 99, and in the second in 20 msec steps (for really odd transmission periods).   Recommended   setting: '60,00s' for Classic, '12,00s' for Sprint, don't care for Foxoring.
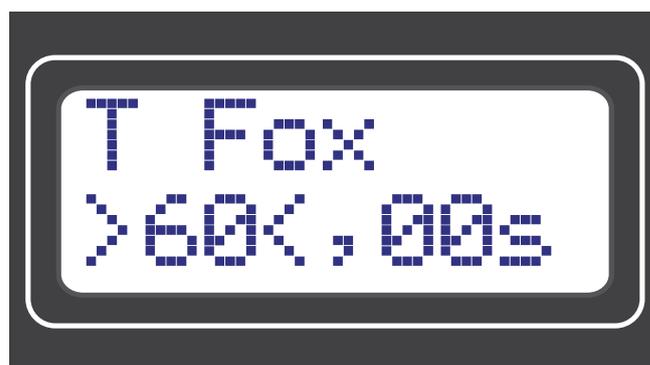
Warning: in the calibration menu, with just a few clicks, you can change or completely erase the factory calibration of the receiver. If you use calibration menu functions, please read the following instructions carefully!

In the calibration menu you can select the menu language, set the low battery alarm threshold, adjust the distance estimation, adjust the auto power off time, store the changed values to the EEPROM, change the greeting message and the names of the Memories. In addition there are some menu items reserved for factory use only.

To start the calibration menu turn the receiver off, switch to Menu, and turn it on again while the Encoder is pushed. To exit the calibration menu switch to Operate. To make changes to calibration menu items permanent, you must go to 'SaveCal Values, see page 23.

Language

Select menu item 'Language/Sprache' and push+turn the Encoder to switch between English and Deutsch (German).

```
Language
English
```

```
Sprache
Deutsch
```

Reset to default settings

Factory use only! If you select the menu item 'EEPROM Reset' and click the Encoder, you will lose all calibration values and user settings! If you did by accident: switch to Operate, then turn off the receiver.

Battery voltmeter calibration

Select the menu item 'Cal VBat' to re-calibrate the battery voltage measurement. It is recommended not to change the factory setting.

Frequency calibration

Select the menu item 'CalF' and push+turn the Encoder to calibrate the receiver's frequency in 100 Hz steps. It is recommended not to change the factory setting.

```
CalF  +30
```

Attenuator calibration

The factory uses the menu item 'Cal Att' to calibrate the attenuator in 23 steps of 5 dB each. This requires the proper test setup, and a precise signal generator. It is recommended not to change the factory setting.

```
Cal Att.
÷ Start
```

Low battery alarm threshold

The low battery alarm threshold can be adjusted by rotating the Encoder until the "BatAlarm" sign appears on the screen. Press and turn the rotating encoder to enter 6,5 V value (for Lithium-Polymer rechargeable battery).

```
BatAlarm
< 6.5 V
```

Distance estimation adjustment

If you have the feeling that the distance estimations are always too near or always too far, you can change the estimation by up to +/- 5 steps of 5 dB each. Select menu item 'Cal Dist' and push+turn the Encoder to adjust. Recommended setting: '+0'.

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Auto shutdown time

You can easily forget to turn off the receiver after unplugging the headphone. With this feature, the receiver will check at the set time after your last interaction with the Encoder or Switch, if a headphone is plugged. If not, the receiver will go off. Select menu item 'Auto Off' and push+turn the Encoder to set the time from 10 to 70 minutes, or to 0 for no auto-off. Recommended setting: '30 Min'

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Save calibration values

To make changes in the calibration menu (i.e. language, battery threshold, distance adjustment, shutdown time) permanent, go to the menu item 'Save Cal Values' and click the Encoder. **Never do this if you are not absolutely sure what you have changed!** If you are not sure, switch to Operate, turn the receiver off, and all changes are forgotten.

Change start text and Memory names

You can change the text shown at power-on and the names of the 6 Memories. Each is 8 characters long. Select menu item 'Change Names' and click the Encoder. The start name is shown, with the cursor on the leftmost character. Turn the Encoder to select a character, push+turn to change this character. Available characters are 0..9, A..Z, a..z, blank. Click to go the next text line. All changes are stored directly, do not use 'Save Cal Values'.

Menu Overview (Software-Version FJRX85 V1.A)

Switch	Function	Display
Operate	< > Attenuator +/-5dB <*> Frequency +/- 100 Hz ** Next Frequency # a Reduce Attenuation A Auto-Attenuator On/Off	Fox-Timer Estimated Distance S-Meter 1-4 Dots: Frequency # * = Auto-Attenuator Off
Menu	< > Select Menu Item	Frequency Clock (h:mm) Battery Voltage

Main Menu, Exit with Switch => Operate, Displays Memory Name

Menu Item	Function	
Change Freq.	* Start ==>	< > Frequency +/- 1 kHz <*> Frequency +/- 100 Hz * Next Frequency #
Memory	<*> Switch between the 6 Memories * Show Memory Overview: N_Fox, T_Fox, P_Fox	
Clk Start	* Restart Clock at 0:00	
Tmr Start	* Restart Fox Timer <*> Change current Fox #	
Setup Menu	* Start Setup Menu ==>	< > Select Menu Item

Setup Menu, Exit with Switch => Operate, Displays Memory Name

N Foxes	<*> # of Foxes 1..10 (1 = Foxoring)
T Fox s	<*> Fox transmit time 1..99 sec
T Fox ms	<*> Fox transmit time +/- 20 msec
P Fox	<*> Fox output power 30 nW - 30 W, dB only
N Freq	<*> # of frequencies used 1..4, 12**A3, 1x2**A3
T Alarm	<*>Alarmtime 1 - 30 sec before end of transmission (0 = Off)
AcoustSM	<*> Acoustic S-Meter Off / F/B-Zoom / Maximum
NearTone	<*> Proximity Warning for distances 300..30m, Off

Rotary Encoder

< >	Turn
<*>	Push + Turn
*	Click
**	Double-Click

Switch to 'Attenuator'

a	Click
A	Push Long

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Calibration Menu	Start: Turn on RX while * and switch at Menu
Language	<*> Select Deutsch/English
EEPROM Reset	* Reset all Calibration and Setup values
Cal VBat	<*> Calibrate battery voltage measurement
CalF	<*> Adjust Frequency Offset +/- 0..9,9 kHz
Cal Att Start	* Calibrate Attenuator in 23 5dB-Steps
BatAlarm	<*> Adjust Battery Alarm Threshold 5,8..8,0 V
Cal Dist	<*> Adjust Distance Estimation –5..+5 (x 5 dB)
Auto Off	<*> Adjust Auto Power Off time 0-70 minutes (0=Off)
Save Cal Values	* Store calibration values to EEPROM
Change Names	* Change Start-Name + Memory Names 1..6

Caution: The calibration menu is for advanced users only. Incorrect settings can disrupt the normal operation of the receiver!

Functions available in the locked mode

Switch	Function	Display
Operate	< > Attenuator +/-5dB ** Next Frequency # a Reduce Attenuation	Fox-Timer Estimated Distance S-Meter 1-4 Dots: Frequency #
Menu	None	Frequency Clock (h:mm) Battery Voltage

Rotary Encoder
< > Turn ** Double-Click
Switch to 'Attenuator'
a Click

Using the receiver

Preparation

Before the competition you must set up the receiver.

Go to the main menu and select the correct Memory, i.e. Classic, Sprint, Foxoring or any other.

Go to the setup menu and check all settings: number of foxes, fox transmit time and power, and the number of frequencies. Also check your settings of the end-of-transmission alarm, acoustical S-meter, and proximity warning. Go back to the main menu and set the correct frequencies. Make sure the frequency of the first fox is selected, not the beacon frequency.

In an official competition you may have a model transmitter. If you do, use it to fine-tune the frequency. Position yourself in a known distance of 100 – 300 m from the transmitter. Turn the receiver to get the maximum signal strength, do not press the F/B-buttons. If the estimated distance in the display does not match the actual distance, go to 'P Fox' in the setup menu and adjust it until you get the desired distance reading. Now the receiver is ready and you can turn it off.

Going on the hunt

To correctly synchronize the fox timer and clock, turn on the receiver exactly at the start signal. If necessary you can adjust the audio frequency of the received signal in 100 Hz steps by pushing+turning the Encoder. A frequency of 800 to 1000 Hz is recommended. To find the direction to the fox, rotate the receiver around its vertical axis and find the direction in which the signal is minimal. Then turn the receiver 90 degrees and press the blue and green buttons alternately, switching to the two cardioid patterns. The fox is in the direction of the stronger of the two signals. The distinction is easier if you use the F/B-Zoom. The display shows the estimated distance to the transmitter. At the beginning of the transmission of each fox, it is recommended to briefly push the Switch to the Attenuator position to let the attenuator adapt to the new signal level, so that the distance estimations are meaningful.

EC DECLARATION OF CONFORMITY

In accordance with EN ISO 17050-1: 2004

We,

RigExpert
(Manufacturer's name)

Of

17A, Yakira Str., Kyiv, 04119, Ukraine
(Address)

Declare under our sole responsibility that the product:

Equipment	ARDF Receiver 3.5Mhz
Brand name	RigExpert
Model number	FoxRex 3500

to which this declaration relates, is in conformity with the following standards and/or other normative documents:

- EN 60950-1:2006
  Information technology equipment – Safety - Part 1: General requirements

- IEC 61000-4-2:2008
  Electromagnetic compatibility (EMC)—Part 4—2: Testing and measuring techniques – Electro-static discharge immunity test (IEC 61000—4—2:2008)

- IEC 61000-4-3:2010
  Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006+A1:2007+A2:2010)

- EN 301 489-1:2017
  Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU

- EN 301 489-15:2010
  Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 15: Specific conditions for commercially available amateur radio equipment; Harmonised Standard covering the essential requirements of article 3.1(b) of the Directive 2014/53/EU

We hereby declare that the above-named product is in conformity to all the applicable essential requirements of Low Voltage Directive 2006/95/EC of 12 December 2006 and the Electromagnetic Compatibility Directive 2004/108/EC of 15 December 2004.

The technical documentation relevant to the above equipment will be held at:
TESTSVYAZ IT LLP
Suite 1, 5 Percy Street, Fitzrovia, London, W1T 1DG, The United Kingdom
(name and address of EU representative)

Denis Nechitaylov
Director
(name)

(Signature of authorised person)

June 02, 2017
(date)

http://www.rigexpert.com

Doc. date: 10-10-2018