



- Vario (Jeti-Duplex EX)

Manual Version 1.4



Introduction

The VSpeak Vario is available in a standard and a "pro" version. Most essential differences of the "**pro**" version are even **higher sensitivity of the Vario** and greater measuring range for acceleration (see Section 8).

The VSpeak-Vario is a sensor for measuring:

- relative altitude (atmospheric pressure)
- rising- /falling speed (Vario)
- voltage (receiver battery voltage and / or **drive battery single cell voltage**)
- **acceleration (... X, Y und Z-axis)**
- temperature (... of the VSpeak board)

The VSpeak Vario is fully compatible with Jeti Duplex EX.

Over the Jeti Duplex telemetry system, the measured values are displayed live on a JetiBox (Standard / Mini / ProfiBox) visually or Jeti DC/DS-transmitters.

All measured values and alarms can be translated to speech in Jeti-DC/DS-transmitters. For radios with Jeti GHz retrofit modules, a speech output is only possible in combination with the VSpeak-speech module. If the ProfiBox is used, only the alarms can be translated to speech (see the respective manuals for the speech settings).

All measured data can also be logged by VSpeak-Vario - and - with the help of Logview or with VSpeak-Tools clearly presented and evaluated.

Because of its small size and light weight, as well as the ability of single cell monitoring of a drive battery, the VSpeak-Vario is predestined primarily for use in small electric gliders.

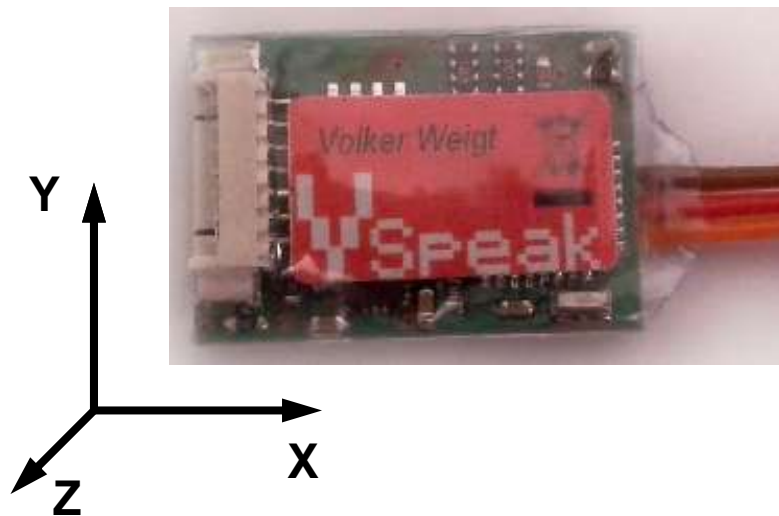
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1 Installation

The VSpeak-Vario can be attached with double-sided Velcro tape on the model. For the Velcro the smooth shrink tube level in the range of the SD card slot is suited. In the following picture, the orientation of the axes for the acceleration measurement is shown:



2 Connection

With the 3-pin. Servo connector (UNI) the connection to Jeti Duplex receiver is done to the "ext" designated slot.

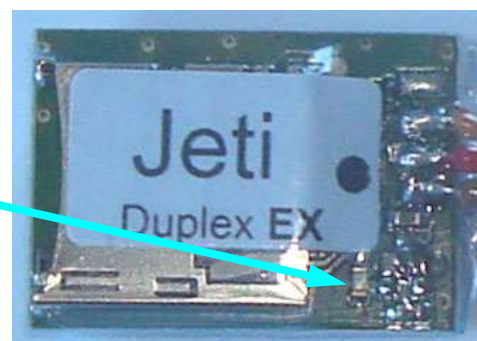
At the VSpeak-Vario jack for single cell voltage measurement balancer adapter can be connected (available as accessory).

Attention ! First, connect the battery's negative and positive pole to the speed controller (or) BEC - as LAST balancer. Disconnect in reverse order, first disconnect the balancercable from the battery!

For correct measurement of cells and the total voltage a ground connection between the negative terminal of the battery and the negative terminal of the receiver is necessary. For controllers with BEC, this connection is automatically done – BUT NOT in opto-controllers, there you have to make a ground connection separately.

2.1 Operation display

Error-free operation of the VSpeak-Vario is indicated by the "flashing" blue LED light.



3 Telemetry operation with Jeti Duplex



With the ▼ Down button can be switched to the display of VSpeak-Vario.

As long as the VSpeak-Vario is operated via an expander E4, it can only be returned to the expander display from the display "A" with a long pressing of ◀ Left button - OR - generally leave the VSpeak-Vario display with a long pressing of ▲ Up button.

3.1 Measurement display

The measured values of VSpeak-Vario are displayed on several pages. The measurement displays are starting with the letter "A" (first character in the top line) "numbered".

Through the displays can be "scrolled" with the ► Right button - or - ◀ Left button. Simultaneous pressing ◀ Left and ► Right button changes between:

A - current measured value

< - minimal values

> - maximum values

Minimum and maximum values are deleted when turning off the VSpeak-Vario.

Example

A VS-Vario 5.2V
312m 2.1m/s

- voltage (here: Rx-Spg.) (5.2V)
- relative altitude (312m)
(When turned on is the altitude ZERO.)
- rising/falling speed (2.1m/s)

If the balancer connection is not used, the receiver voltage is displayed.

Is the balancer used, then, according to the parameterization, the "smallest cell voltage" - OR- the "total cell voltage" - OR- "RX voltage" can be displayed.

BX 0.1Y-0.2Z 0.9
312m 2.1m/s

- acceleration X-axis (0.1g)
- acceleration Y-axis (-0.2g)
- acceleration Z-axis (0.9g)
- relative altitude (312m)
(When turned on is the altitude ZERO.)
- rising/falling speed (2.1m/s)

C 4.08 4.05 4.08
4.09 16.3 5.20

- voltage cell 1 (4.08V)
- voltage cell 2 (4.05V)
- voltage cell 3 (4.08V)
- voltage cell 4 (4.09V)
- total cell voltage (16.3V)
- receiver voltage (5.20V)

D Temperatur
25.3°C

- temperature (25.3°C)

E VSpeak-Vario
FWVer. 1.04

- display firmware

F Erase data
Press <- ->

- Erase min- / max values
The min/max values are also deleted when turning off.

3.2 Parameterization / alarms

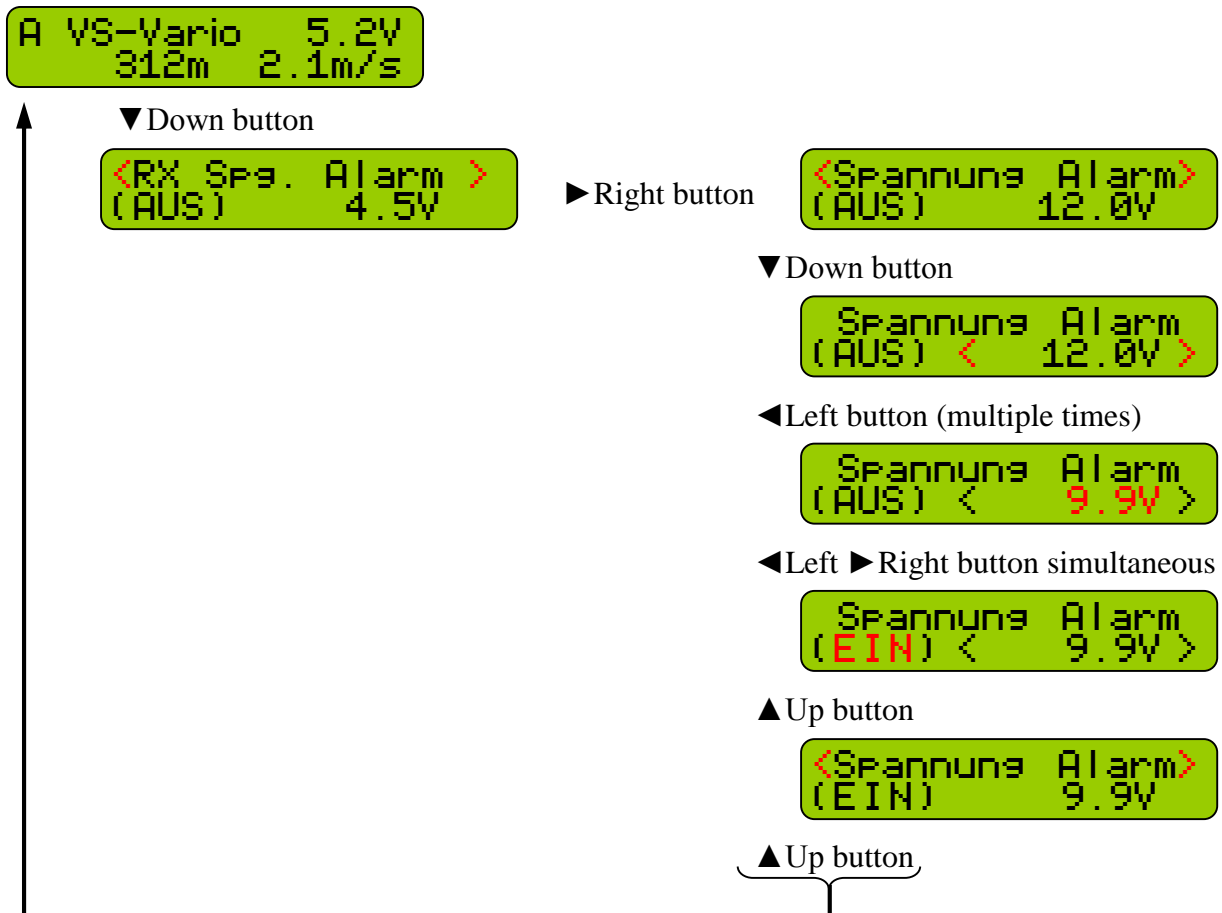
The parameter display can be entered by pressing the ▼Down button.

With the ▲Up button the parameter display is exited (.. to the measurement display). Within the parameter display can be "scrolled" with the ►Right button – or- ◀Left button

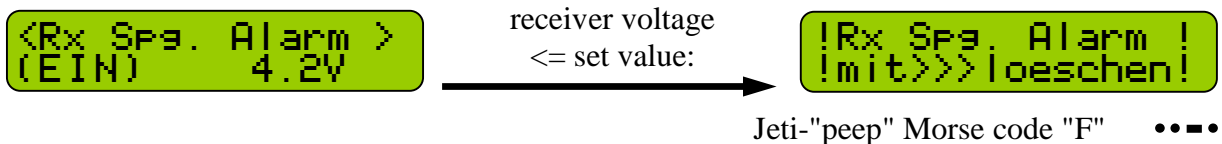
Once the desired parameter is selected, it can be selected to change by pressing again the ▼Down button. Value changes are made with the ►Right button – or- ◀Left button.

Simultaneous pressing of the ◀Left and ►Right button turns the "alarm" for the parameter on/off (EIN/AUS).

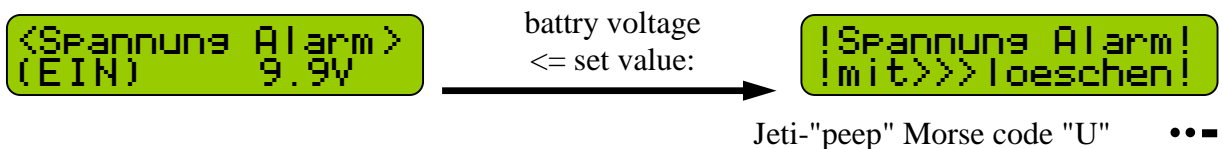
Example for the plane change and parameterization:



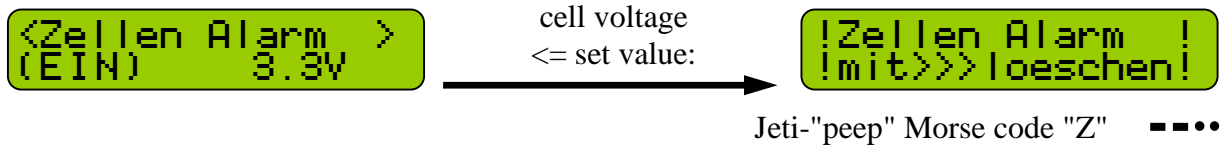
3.2.1 Alarm receiver voltage



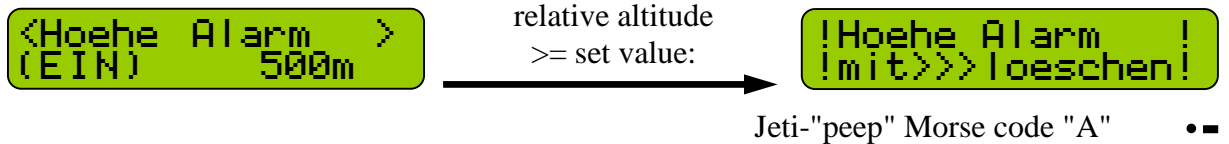
3.2.2 Alarm (drive battery) voltage



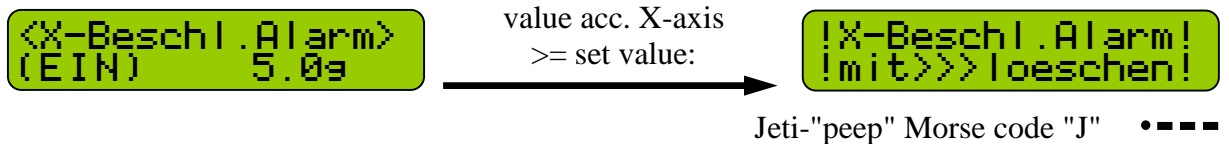
3.2.3 Alarm (drive battery) cell voltage



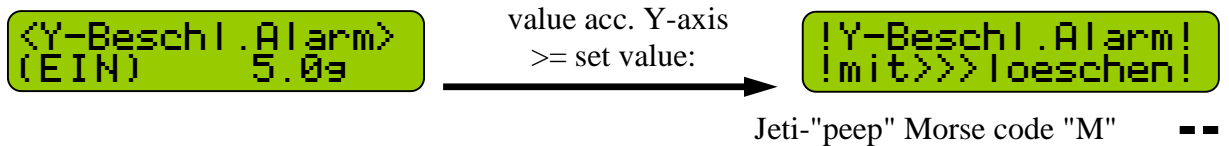
3.2.4 Alarm altitude



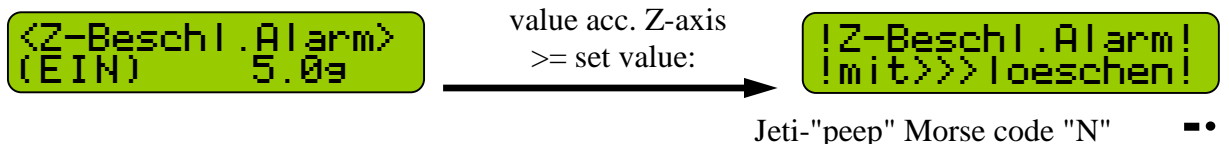
3.2.5 Alarm acceleration X-axis



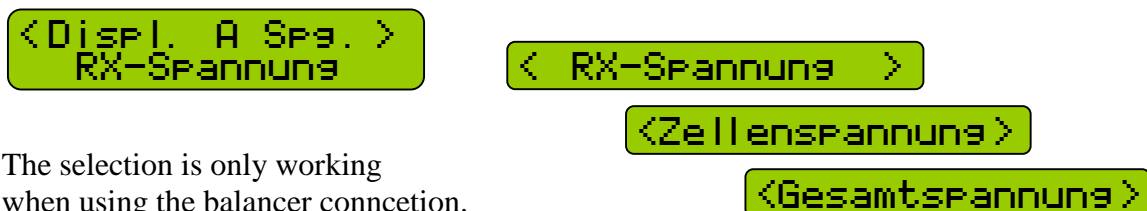
3.2.6 Alarm acceleration Y-axis



3.2.7 Alarm acceleration Z-axis



3.2.8 Selection voltage display "A"



The selection is only working when using the balancer connection.

Then either the receiver voltage, the "smallest" single cell voltage or the total voltage can be shown in the display "A"

If the balancer connection remains unused, then the display "A" shows the receiver voltage

3.2.9 Selection Vario tone

< Varioton
AUS >

< Steigen >

< Sinken >

< EIN >

Only if the Vario tone is generated from the ProfiBox or the Jeti-GHz modules, the desired settings can be done here:

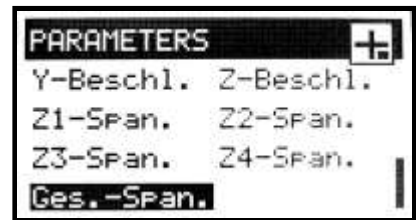
- Steigen ... Vario tone ONLY on climb
- Sinken ... Vario tone ONLY on descend
- EIN ... Vario tone on climb AND descend.

For Jeti DC / DS transmitters or for VSpeak speech modules the parameter "Varioton" is not relevant, because there the Vario tone is generated from the transmitted value.

4 Telemetry operation with Jeti Duplex EX

4.1 ProfiBox

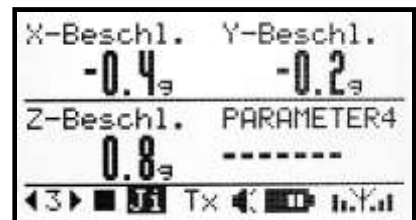
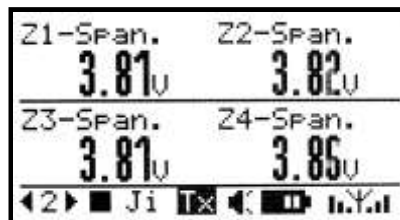
(ProfiBox software version: 01.20)



In the device list under **VSVar** the desired values can be selected. They mean:

- Vario** rising- /falling speed
- Hoehe** altitude
- #-Beschl.** acceleration #-axis
- Z#-Span.** cell voltage No. #
- Ges.-Span.** total voltage

The following pictures show examples how you can arrange the values.

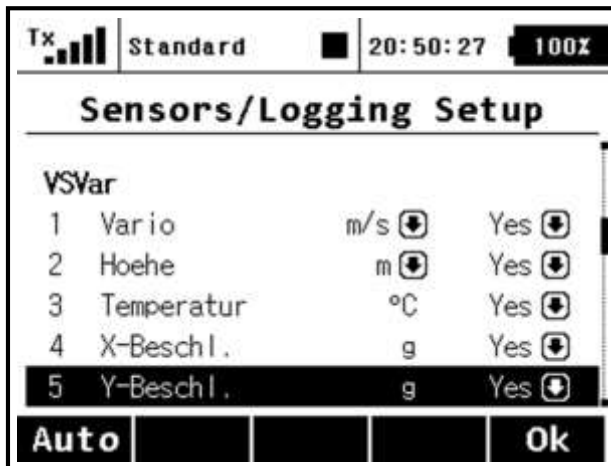


Parameterization and setting of the alarms is described in Section 3.2.

Instead of the Jeti "beeper" the assigned alarms to Morse code letters are announced by a speech output (see ProfiBox manual for relation between Morse Code and Alarm text).

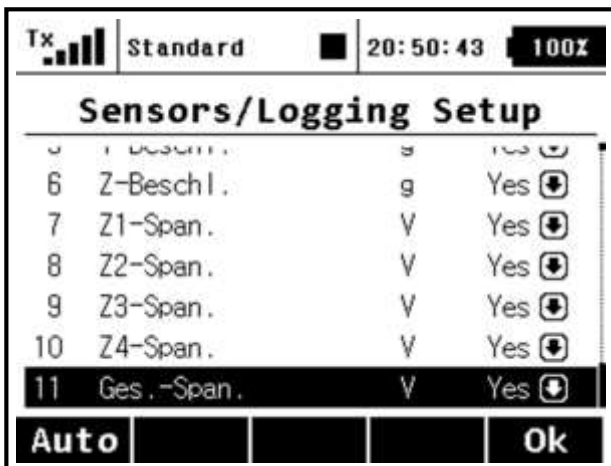
4.2 Jeti-radios DC/DS

(DC-16 software version: 2.20)



The Jeti-DC/DS-transmitters have extensive programming options for displaying sensor values, setting alarm thresholds, activation and repetition of warnings, speech synthesizers, Vario tone ...

All these settings are stored model based in the model memory of the remote control, so it is recommended to disable the alarms in the sensor VSpeak Vario. Select the VSpeak-Vario values in the transmitter and program your settings in the Jeti radio (for details read the manual of the Jeti transmitters).



The VSpeak-Vario values are listed under the device name VSVAR. They mean:

Vario rising- /falling speed

Hoehe altitude

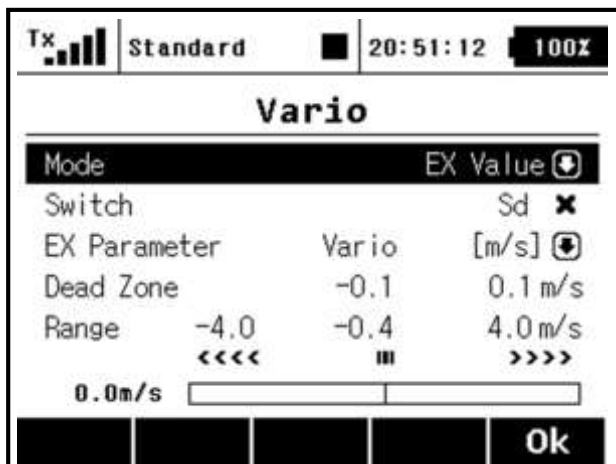
#-Beschl. acceleration #-axis

Z#-Span. cell voltage No. #

Ges.-Span. total voltage

For Vario tone there are settings for Dead Zone and Range available. (read the manual of the Jeti transmitters). Some articles about Vario settings and so on can be found in the internet. Keywords are "sink rate" or "zero lift".

Proven settings for the VSpeak-Vario in a model with ~ 0.4 m / s sink rate are shown in the adjacent picture.



For displaying the telemetry data Jeti-DC/DS-transmitters offer a variety of ways. See left for a demo example.

5 Logging the data

The Vario can also be used as a logger. This requires just a MicroSD card with FAT or FAT16 format to be inserted into the card holder. With each turning on of the Vario a new file is created. Any existing files are not overwritten. The file name is in the form "VS-V_000.VLG", with increasing numbers (The Vario has no clock, thus no file creation date is generated).

Some Micro SD cards might not function. A matching SD card can be purchased at www.VSpeak-modell.de.

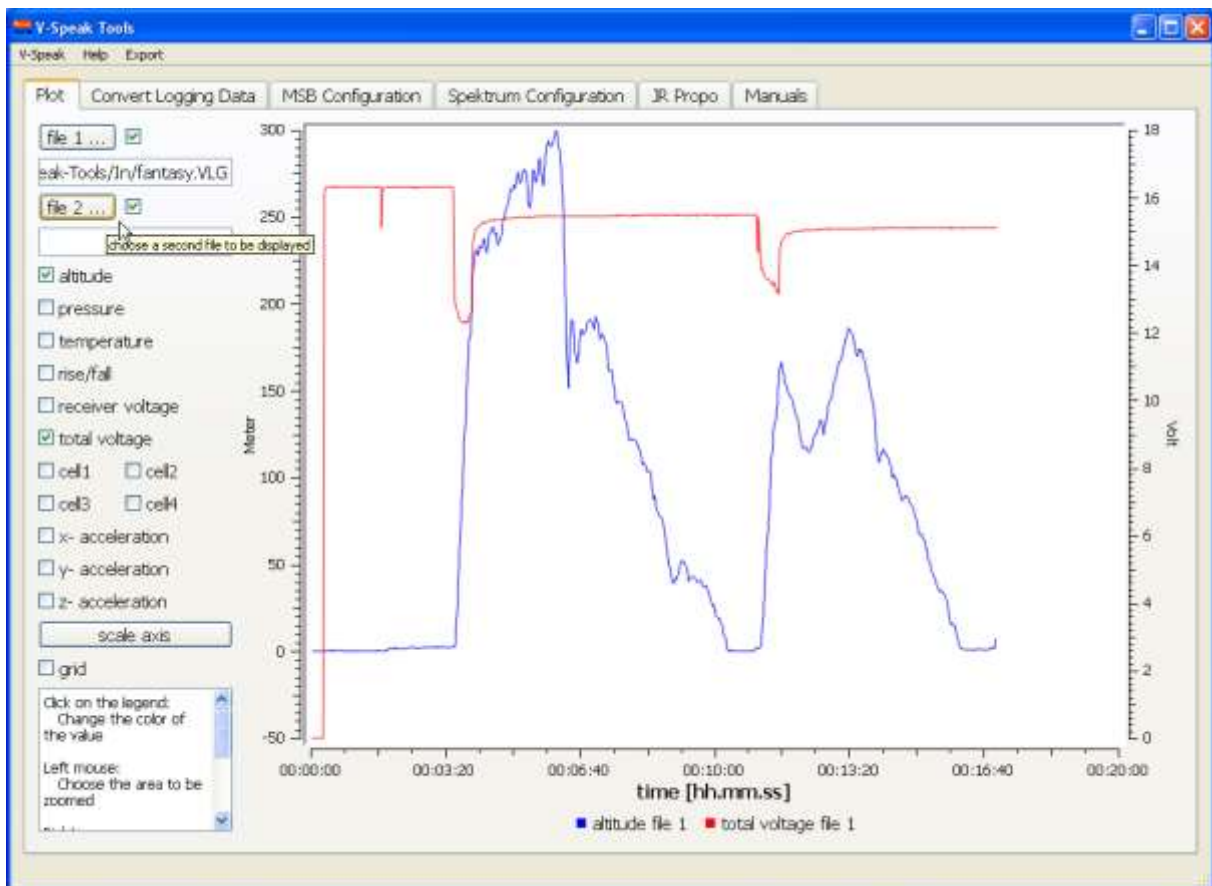
5.1 Logging rate

- The default logging rate is set to 1Hz. Every second the values are recorded and stored every 10s to the SD card.
- If there is a file named „LOGRATE5.TXT“ on the SD card, then the logging rate is set to 5Hz, meaning 5 values per second are recorded and stored every 2s to the SD card. The content of the „LOGRATE5.TXT“ does not matter, only the presence of the file is important.

The analysis of the logged data can be done in several ways:

5.2 Analysis of data using "VSpeak Tools"

Under www.VSpeak-modell.de and downloads can be downloaded the file "VSpeak-tools.zip" and the contained program "VSpeak-Tools.exe" can be started.



Under the tab "Plot" can open the log files directly and the measured values are displayed graphically. The possibility exists, to put the data from two log files "superimposed" and so can easily compare.

5.3 Analysis of data using "Logview"

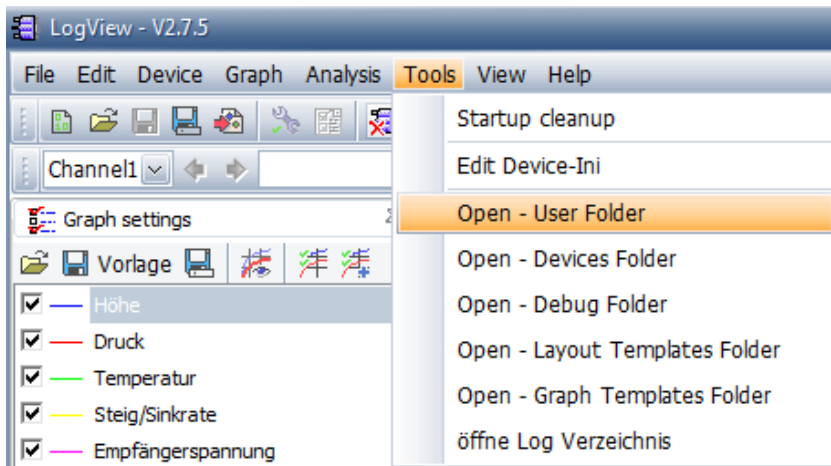
The binary saved log data must be converted using the program "VSpeak-Tools.exe" in csv spreadsheet format. CSV files can be opened by many programs such as Microsoft Excel, Open Office and many other programs. For the program Logview a configuration file is available, so that the data can be presented there in a simple way.

5.3.1 Installation of Logview

If you haven't installed LogView yet you can download the current version at www.logview.info. Run the installation file and follow the instruction of the program.

5.3.2 Installation of Logview for the VSpeak-Vario

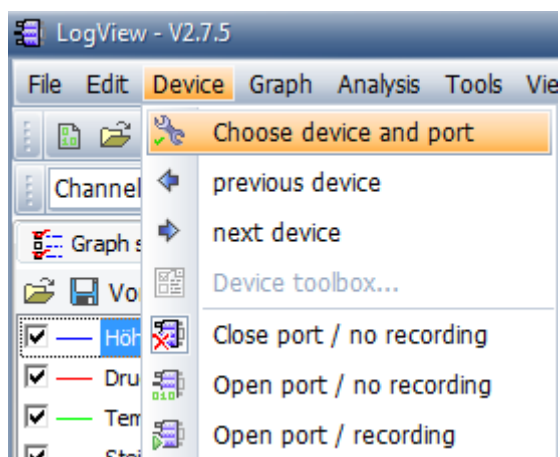
Start Logview. If you have reinstalled Logview you are asked for some settings through which can be skipped with "Next". Go to "Tools" "OPEN - User Folder" in the main menu.



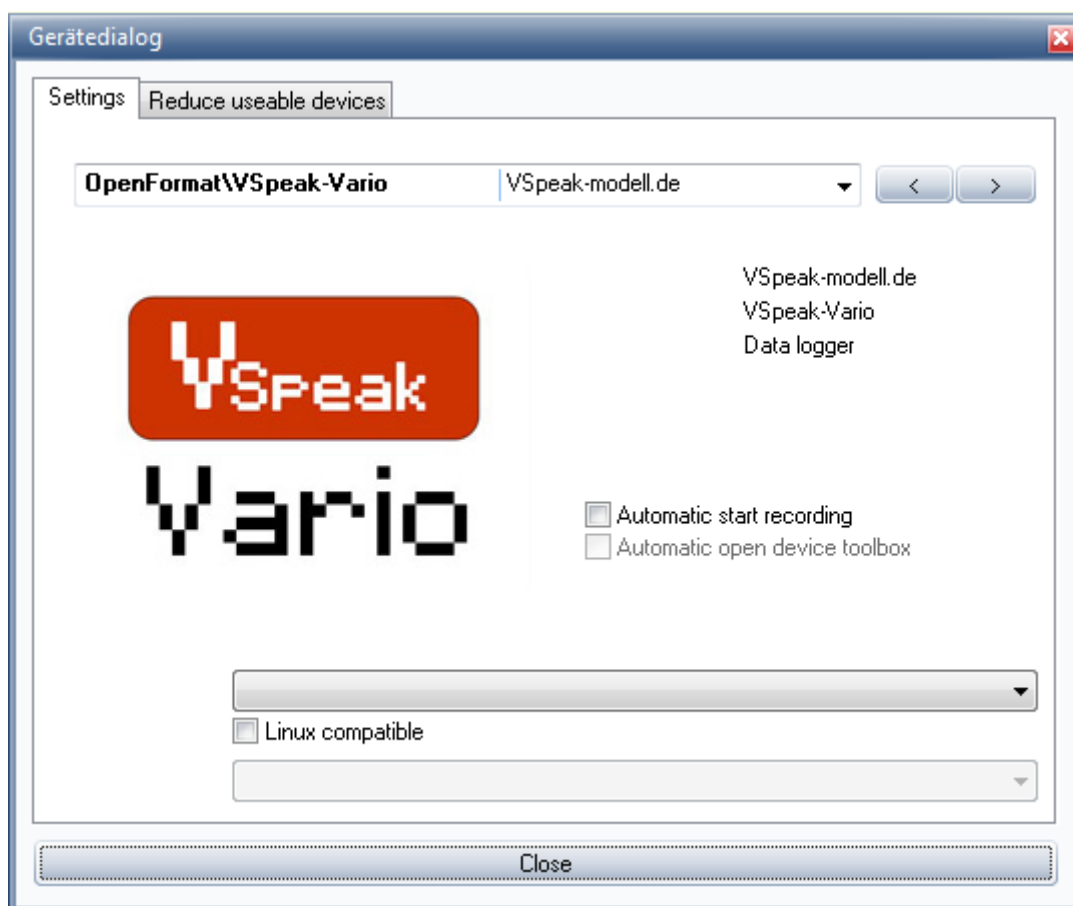
It now opens an Explorer window. Open the sub folder "Devices". Copy the file "Vspeak-Vario.jpg" (provided on the Vspeak Homepage in the file "LogView_VSpeak.zip") in this folder. Copy the file "Vspeak-Vario.ini" in the subfolder "OpenFormat".



Click in the main menu of Logview on "Device" "Choose device and port".



Select in the tab "Device" the "Openformat\VSpeak-Vario".



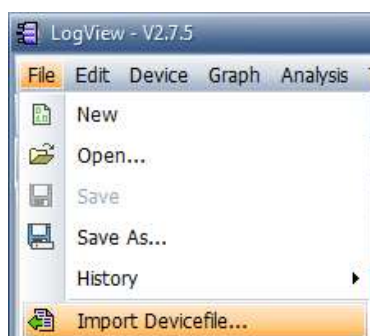
Close the window.

5.3.3 Convert the log files

Run the program "VSpeak-Tools.exe". In the program item "Convert Logging Data," select the Input Path to the folder where your *.VLG files are located. For the outputted format you select the button "Logview". In the Output Path are now the *.csv data for import into Logview ready (see Section 5.4).

5.3.4 Importing the converted data in Logview

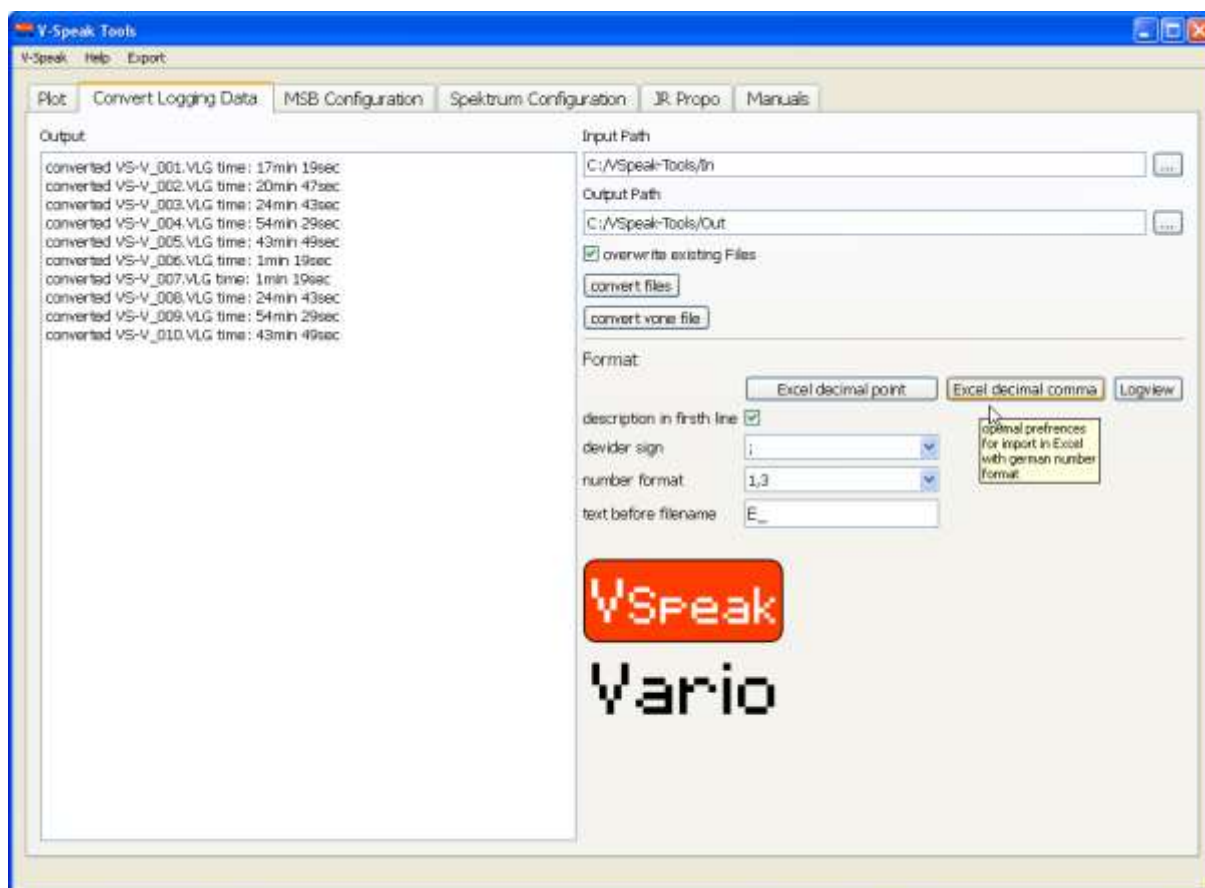
Open Logview and import the desired log file under "File" "Import Devicefile"



Select the CSV file (eg "VS-V_001.csv")
The values should now be displayed graphically.

5.4 Analysis of data using other programs

With "VSpeak-Tools / Convert Logging Data" can be converted the *.VLG data to other formats, e.g. EXCEL, Logview.



6 Update

The processor on the VSpeak-Vario contains a SD bootloader with a version counter.

If firmware updates are available they will be sent via mail. The information in the mail files are copied on the Micro SD card (formatted FAT or FAT16), this is inserted into the speech module and power turned on. The boot loader will recognize the new software version, boots (blue LED "flickers") and is now up to date.

7 Accessories

A micro SD card is NOT included in the package. For updates only Micro-SD cards with a maximum capacity of 2GB are supported. You can obtain a matching card at www.vspeak-modell.de.

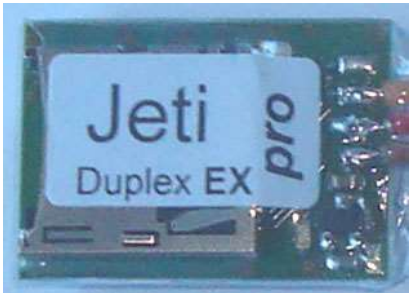
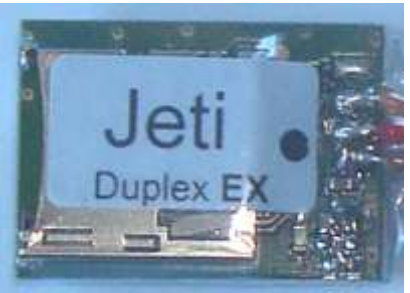

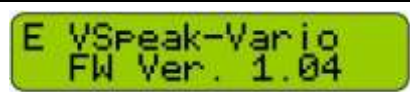
Also NOT included in the package are the on the page www.vspeak-modell.de/variometer/accessories listed balancer adapter cable - these can be ordered separately.

8 VSpeak Vario "pro"

Externally, the VSpeak Vario can only be distinguished by the imprint "pro" against the standard design.

For the height measurement, a Swiss precision pressure sensor is used in the pro version. Its properties result in a higher sensitivity and faster response of the Vario tone with less "noise".

In the "pro" version the acceleration measurement range is up to +/- 24 g in all three axes.

	VSpeak Vario "pro"	VSpeak Vario (standard)
		
display firmware		
acceleration	-24....+24 g	-8....+8 g

9 Technical data

Power supply	3.5 ... max. 9V from receiver (z.B.: 1-2s LiPo)
Power usage	20 mA
Single cell voltage	2 ... 4.5V per cell
Measuring range	receiver voltage: 0....13 V single cell voltage: 0....28 V relative altitude: -1000 ... 8000m acceleration: -8....+8 g or -24....+24 g "pro" temperature: -10....+80°C
Measuring accuracy	receiver voltage: ± 0.1V single cell voltage ± 0.1V relative altitude: ± 2m acceleration: ± 0.1g temperature: ± 0.5°C (in the air pressure sensor)
Resolution	altitude 0.1m
Dimensions	27 x 17 x 5 mm
Weight	5 g
Connections	UNI servo plug input for telemetry connection on the receiver balancer adapter cable for max. 4 cells

10 Instructions for disposal



Equipment marked with the symbol should not be disposed of within household waste.

11 EG Declaration of Conformity

Manufacturer

VSpeak-Modellbau (Volker Weigt)
Priestewitz



We hereby declare that the product

Vario VSpeak

complies with the following European directives:

2004/108/EC EMC Directive
2006/95/EC Low Voltage Directive (LVD)
2011/65/EC Restriction of Hazardous Substances (RoHS)

The presumption of conformity is taken by applying the following harmonized standards:

EN60065 Audio-, video- and similar electronic apparatus - Safety requirements
EN60332 Tests on electric and optical fibre cables under fire conditions
EN60950 Information technology equipment - Safety
EN61000-6-1 Electromagnetic compatibility (EMC)
EN61000-6-3
EN55022 Information technology equipment - Radio disturbance characteristics

Priestewitz, 2012/06/01

.....
Signature
Volker Weigt
Managing Director

12 Version history

Vers.-No	Date	Comment
1.0	06.2012	first retail version
	07.2013	revision Manual (Logging, VSpeak tools)
1.1	11.2013	better signal filtering, Logging rate can be changed from default value 1Hz to 5Hz Logging not limited to 1h 48 min anymore full compatibility with DUPLEX- EX Vario beep for ProfiBox an GHz retrofit modules
1.2	12.2013	Battery monitoring up to 6S Sales start VSpeak-Vario "pro"
1.3	02.2014	Correction alarm displays
1.4	07.2015	Adjusting the baud rate to new REX receivers

13 Contact

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