VSpeak - Vario (HoTT)

Manual Version 1.3

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 10).

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 measured values of the VSpeak-Vario can be displayed and parameterized on the display of the HoTT radios with built in telemetry as well as in the combination of the HoTT retrofit modules using the SmartBox.

The VSpeak-Vario provides its data analogous to a general air module or a electric air module.

For the radios without integrated HoTT speech, ie radios that have been retrofitted with HoTT modules, all measured values and alarms can be announced with the VSpeak-speech module for HoTT, for the rising / falling speed a various vario tone is generated.

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

Using the VSpeak speech module for HoTT, all measurements and alarms of VSpeak-Vario are preferrably output as speech. For the rising / falling speed a variable vario-tone is generated. Using the VSpeak speech module, a variety of individual settings for the announcements can be made (see instructions for speech module VSpeak).

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.
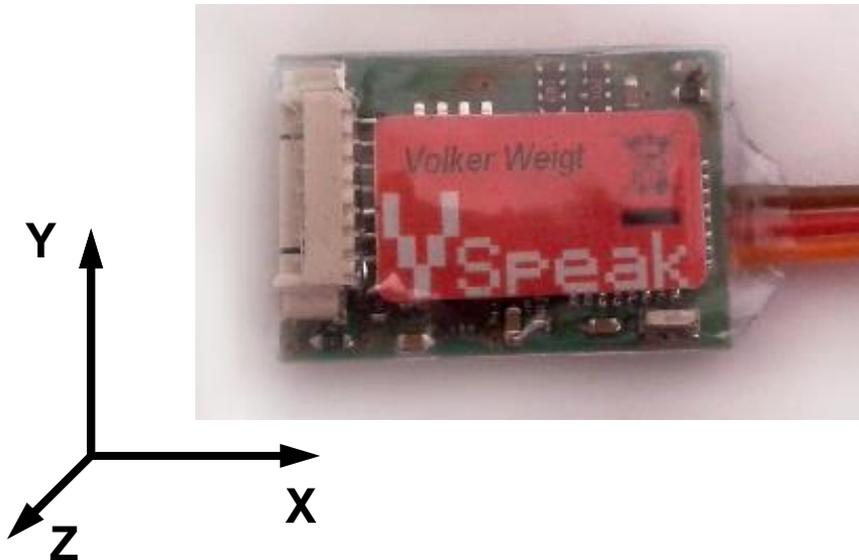
Content

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 HoTT receiver is done to the "T" designated slot.

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

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.

3 Operation display

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

4 Text display

4.1 Overview


```
    VSpeak Vario   >
>    actual Values
Altitude     :     0 m
Diff./Sec    :   0.2 m
CellVoltage:     3.80 V
X-Acc        :   0.0 9
Y-Acc        :   0.0 9
Z-Acc        :   0.9 9
```

ENTER

```
    VSpeak Vario   <>
        Warnings:
>TotalVol.    :   5.4 V
 CellVoltage  :   2.7 V
 Altitude     :   500 m
 Acc          :   4.09

Version: 1.03
```

ENTER

INC+DEC

SET   SET

INC+DEC   INC

```
    VSpeak Vario   >
> actual Values
Altitude     :     0 m
Diff./Sec    :  - 0.2 m
CellVoltage:     3.80 V
X-Acc        :   0.0 9
Y-Acc        :   0.0 9
Z-Acc        :   0.9 9
```

```
    VSpeak Vario   <>
        Warnings:
 TotalVol.    :   5.4 V
>CellVoltage  :   2.7 V
 Altitude     :   500 m
 Acc          :   4.09

Version: 1.03
```

INC   DEC   INC

DEC

```
    VSpeak Vario   >
>     Min. Values
Altitude     :  -  1 m
Diff./Sec    :  - 0.8 m
CellVoltage:     3.78 V
X-Acc        :  -0.5 9
Y-Acc        :  -3.4 9
Z-Acc        :  -0.8 9
```

INC   DEC

DEC

With INC+DEC or SET
the value of the selected warning
threshold is enabled for change
(inverted).

With INC the value can be
Increased,

With DEC it can be reduced.

Stored is after INC+DEC or SET

```
    VSpeak Vario   >
>     Max. Values
Altitude     :      1 m
Diff./Sec    :    0.9 m
CellVoltage:     3.86 V
X-Acc        :    0.5 9
Y-Acc        :    1.4 9
Z-Acc        :    3.1 9
```

```
    VSpeak Vario   <>
        Warnings:
 TotalVol.    :   5.4 V
>CellVoltage  :   2.7 V
 Altitude     :   500 m
 Acc          :   4.09

Version: 1.03
```

SMART-BOX

ESC   DEC   INC   ENTER

SET

MX-12
MX-16
MC-16
MC-20
MC-32

```
    VSpeak Vario   <
        Settings:
>Beep (Vario):    on
 Sensor ID   :    GAM


Version: 1.03
```

ESC

4.2 Warning threshold

```
VSpeak Vario   <>
      Warnings:
>TotalVol.   :   5.4 V
 CellVoltage :   2.7 V
 Altitude    :   500 m
 ACC         :    4.0g

Version: 1.03
```

Setting warning thresholds		
Value range	Step size	Signal tone
0.0 … 25.4 V	0.1 V	P
0.0 … 10.0 V	0.1 V	Q
0 … 2540 m	10 m	Z
0.0 … 24.0 g	0.1 g	W

The warning threshold ACC applies to all 3 axes of acceleration, the alarm is generated if the absolute value of one of the 3 axes is greater than the warning threshold.

4.3 Settings

```
VSpeak Vario   <
     Settings:
>Beep (Vario):   on
 Sensor ID   :  GAM



Version: 1.03
```

Settings	
Value range	comment
on / off	only relevant for SmartBox
GAM / EAM	GAM **G**eneral **A**ir **M**odul EAM **E**lectric **A**ir **M**odul

The change of the sensor ID is effective after turned on again.
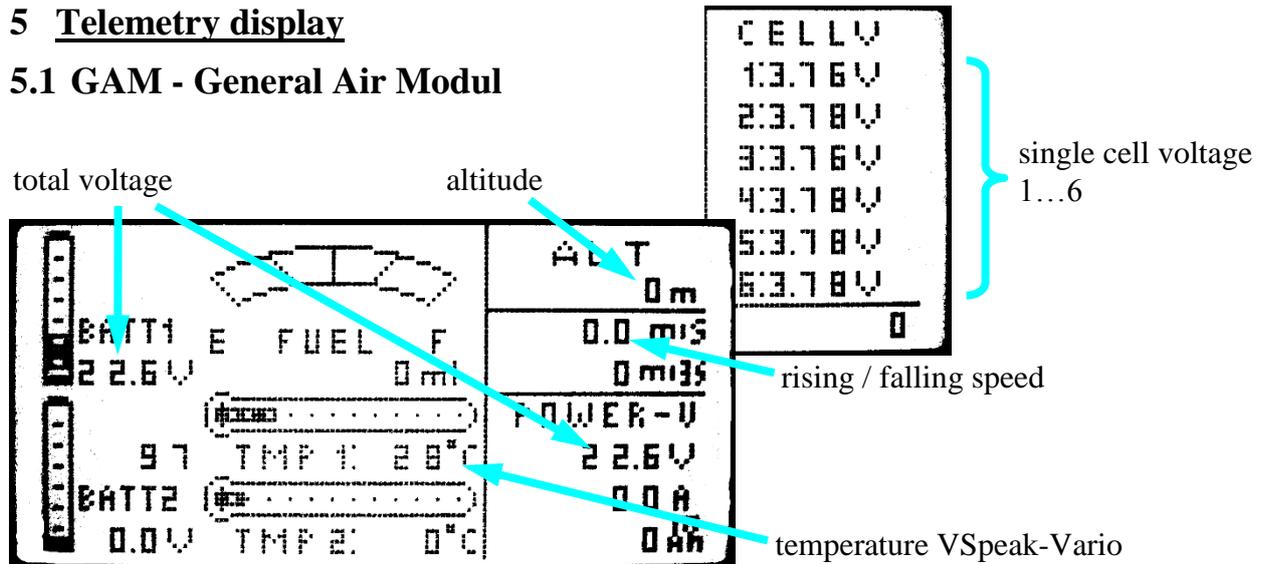
4.4 Signal tone

If voltages fall below the warning threshold or if altitude or the absolute values of acceleration exceed the warning thresholds, a signal tone or a corresponding speech output will be generated.

The assignment signal tone to speech output can be found in the manual of your radio or when using the speech module VSpeak to these manual.

Since no warning is provided in the HoTT system for acceleration, the signal tone for current "W" is used.
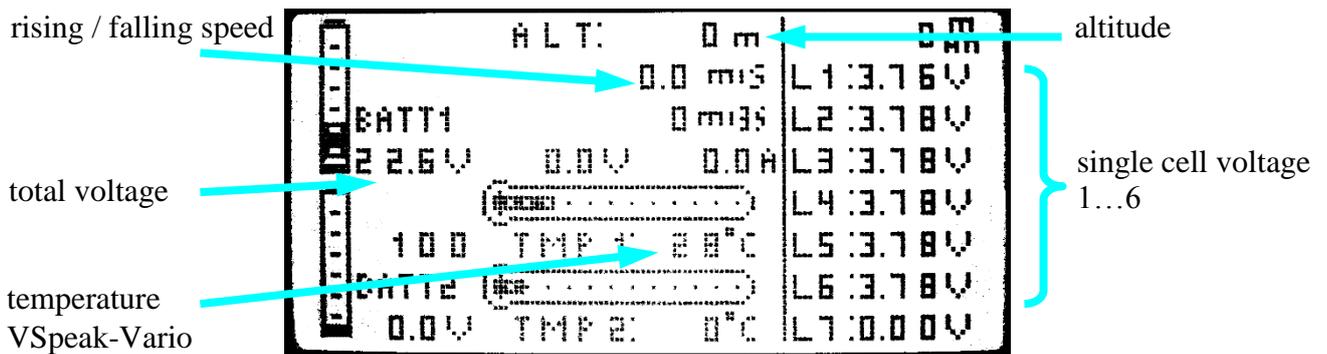
If no beeps / warnings are used, the respective warning thresholds should set on "unreachable" values such as: CellVoltage = 1.5V.

5 Telemetry display

5.1 GAM - General Air Modul

total voltage

altitude

single cell voltage 1…6

rising / falling speed

temperature VSpeak-Vario

5.2 EAM - Electric Air Modul

rising / falling speed

total voltage

temperature VSpeak-Vario

altitude

single cell voltage 1…6

6 Vario tone

In current HoTT radios Vario tone is generated from the value of the transferred rising / falling speed, details can be read in the respective operating instructions.

In the speech module VSpeak there are a number of settings for the Vario tone available made (for the HoTT-GHz module should be set: TX: VARIO TONE: OFF).

The setting "Beep (Vario): on" should only be made when the SmartBox generates the Vario tone.

7 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 migth not function. A matching SD card can be purchased at www.VSpeak-modell.de.

7.1 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:

7.2 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.
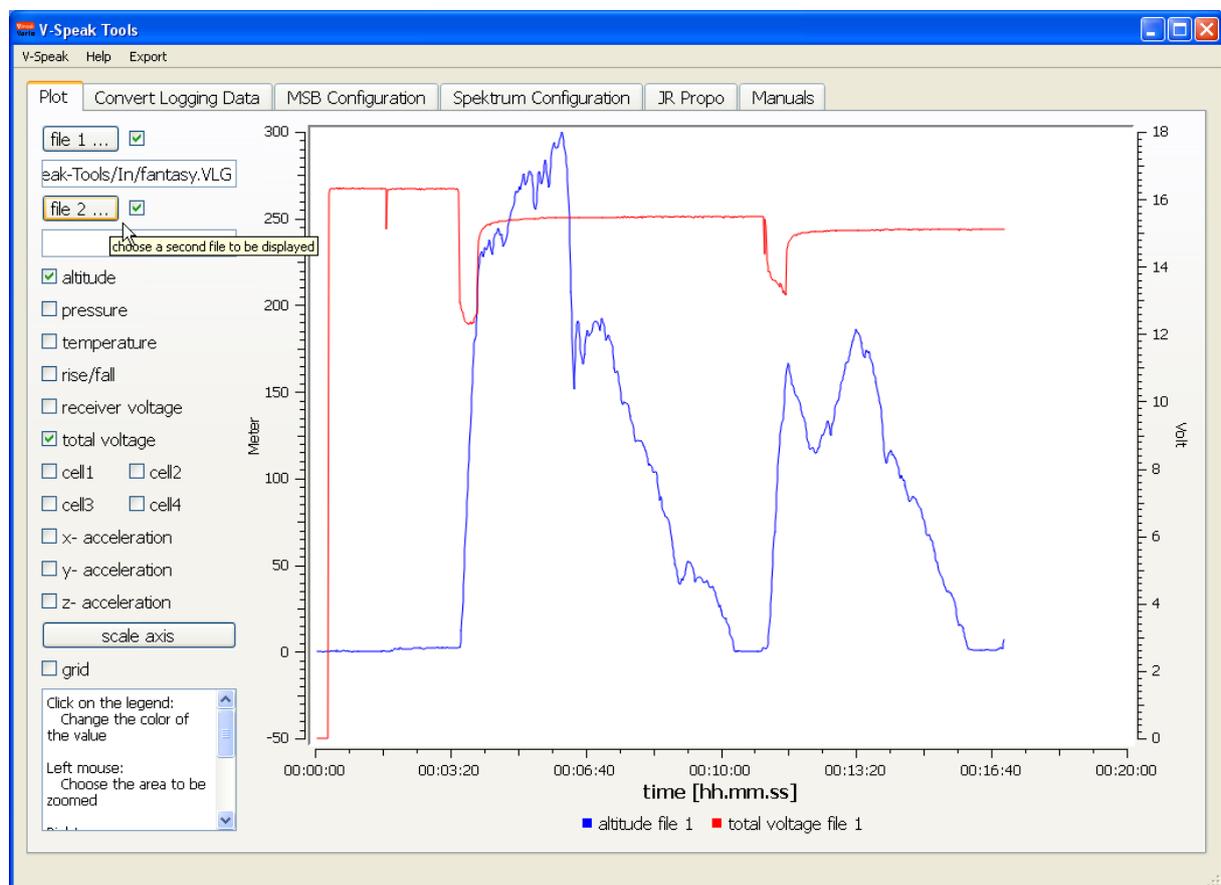
Under the tab "Plot" can open the log files directly and the measured values are displayed graphically. The possibility exists, to put the data from two log files "superimposed" and so can easily compare.

## 7.3 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.

7.3.1 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.

### 7.3.2 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.
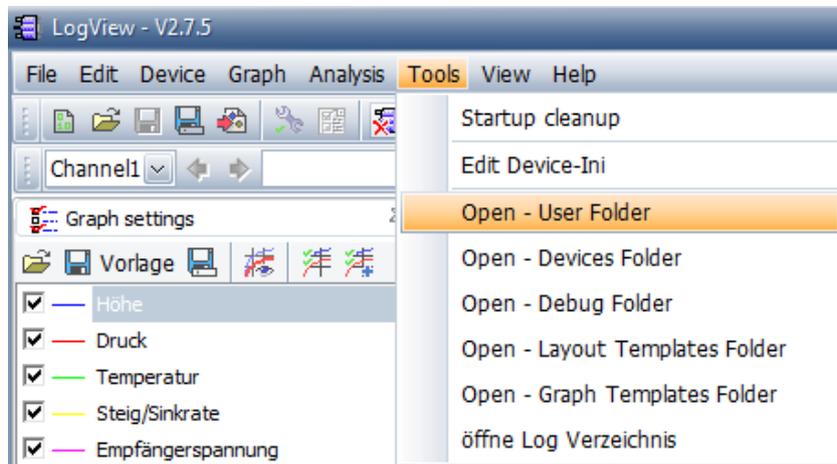
It now opens an Explorer window. Open the sub folder "Devices". Copy the file "Vspeak-Vario.jpg" (provided on the Vspeak Homepage in the file "LogView_VSpeak.zip") in this folder. Copy the file "Vspeak-Vario.ini" in the subfolder "OpenFormat".

Click in the main menu of Logview on "Device" "Choose device and port".
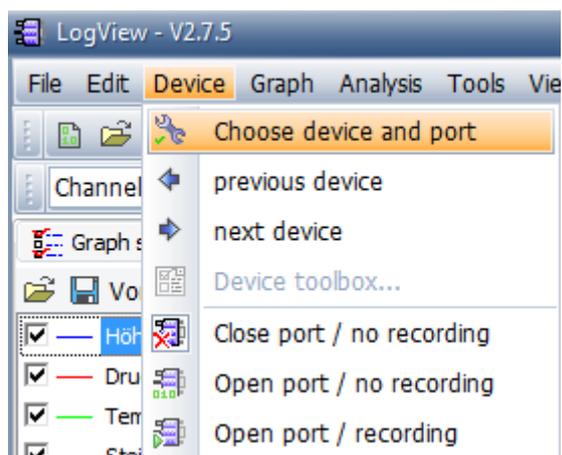
Select in the tab "Device" the "Openformat\VSpeak-Vario".

Close the window.

7.3.3 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 7.4).

7.3.4 Importing the converted data in Logview

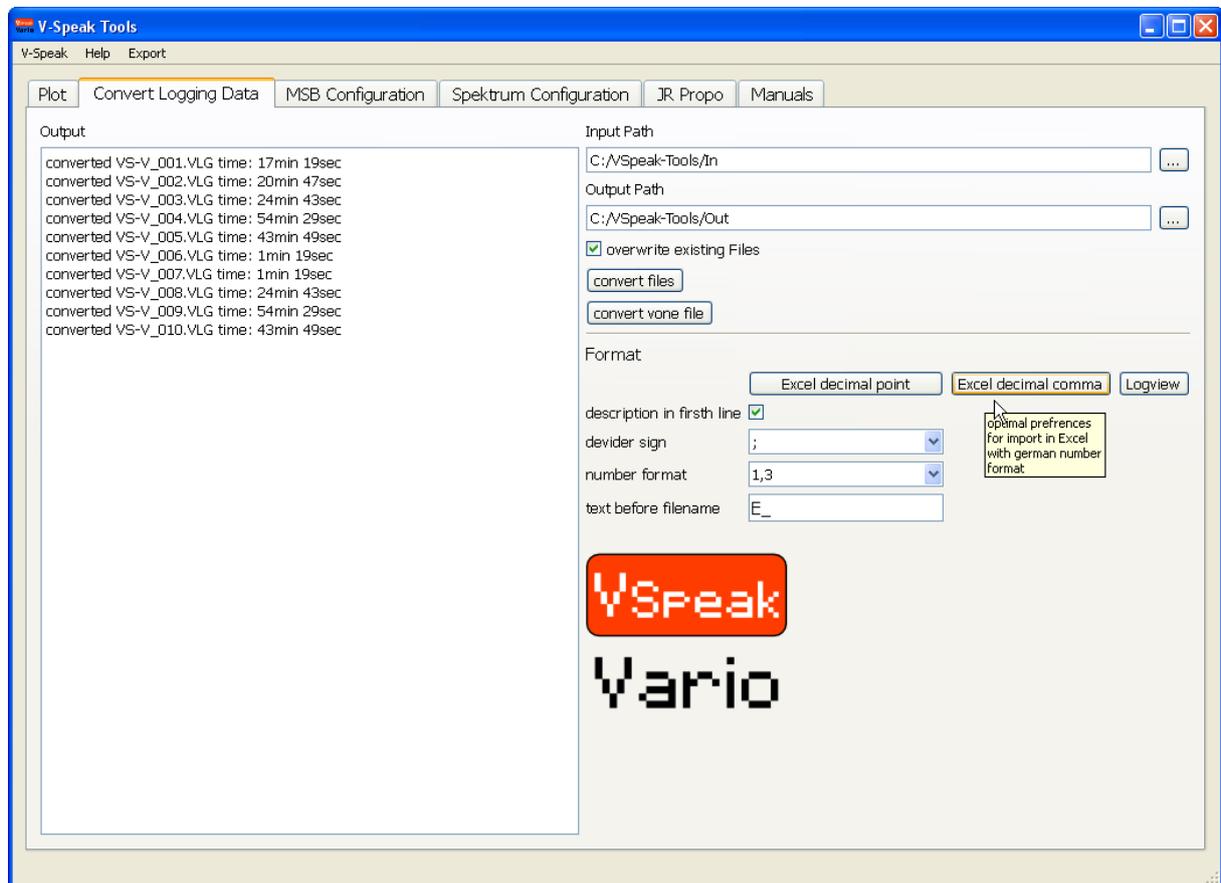Open Logview and import the desired log file under "File" "Import Devicefile"
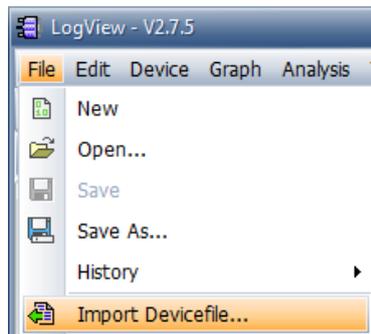
Select the CSV file (eg "VS-V_001.csv")
The values should now be displayed graphically.

7.4 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.

8 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.

9 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.

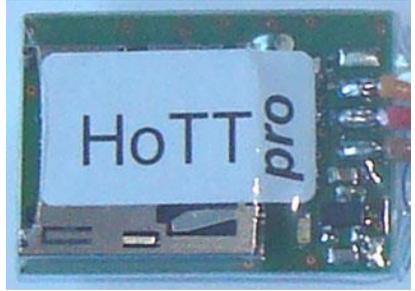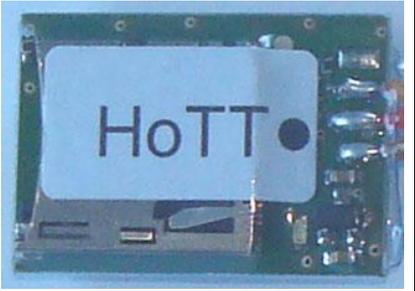Also NOT included in the package are the on the page www.vspeak-modell.de/variometer/accessories listed balancer adapter cable - these can be ordered separately.

10 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 text mode	VSpeak Pro Vario > > actual Values	VSpeak Vario > > actual Values
acceleration	-24….+24 g	-8….+8 g

11 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: $\pm$ 0.1V single cell voltage $\pm$ 0.1V relative altitude: $\pm$ 2m acceleration: $\pm$ 0.1g temperature: $\pm$ 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. 6 cells

12 Instructions for disposal

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

13 EG Declaration of Conformity

CE

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 aparatus - 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, 2013/11/01

....
Signature
Volker Weigt
Managing Director

14 Version history

Vers.-No	Date	Comment
1.1	11.2013	first retail version
1.2	12.2013	Battery monitoring up to 6S Sales start VSpeak-Vario "pro"
1.3	08.2014	Settings: GAM / EAM

15 Contact

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