



# - Vario (PowerBox P<sup>2</sup>Bus)

## Manual Version 1.01



### 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 7).

The VSpeak-Vario is a sensor for measuring:

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

The VSpeak Vario is compatible with the P<sup>2</sup>-BUS telemetry interface from PowerBox Systems. All measured data can also be logged by VSpeak-Vario - and - with the help of Logview clearly presented and evaluated.

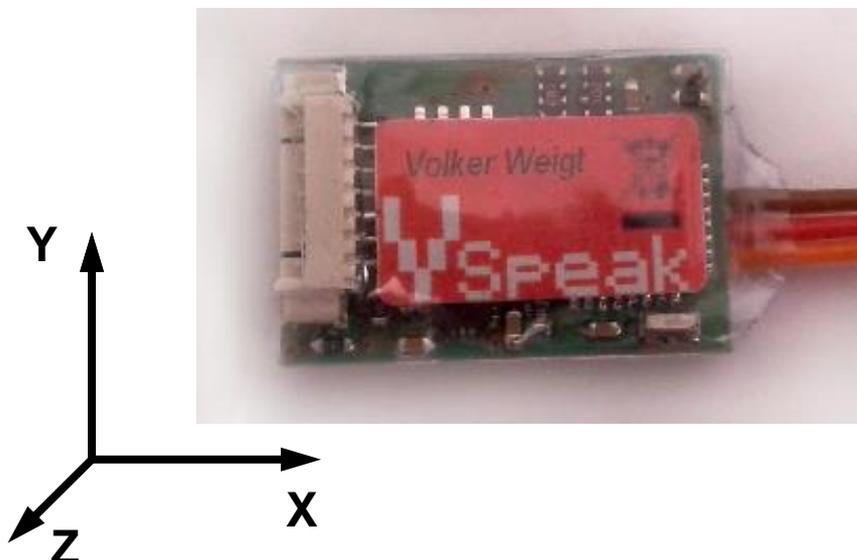
**Because of its small size and light weight, as well as the ability of individual cell monitoring of a drive battery, the VSpeak-Vario is predestined primarily for use in small electric gliders.**

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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

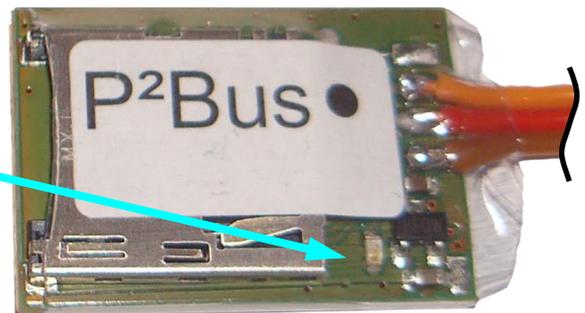
With the 3-pin. Servo connector (UNI / JR) the connection to J PowerBox R receiver can be made directly to the P<sup>2</sup>-Bus labled inputs or via V cable for connection of several sensors.

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.

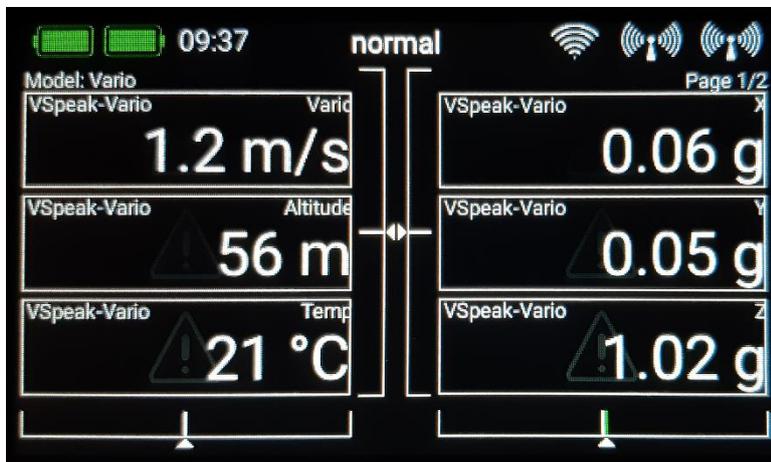
### 2.1 Operation display

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

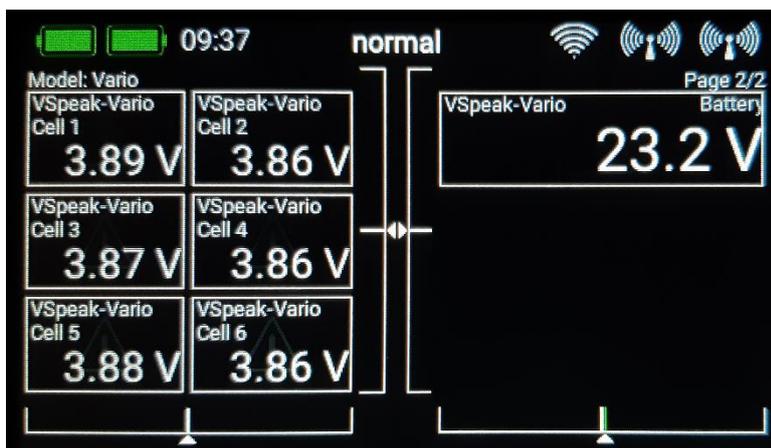


## 3 Live Telemetry

The example of the two displays of the PowerBox Core shows all possible measured values of the VSpeak Varios:



Variotone, speech outputs and alarm thresholds are to be configured in the PowerBox Core.

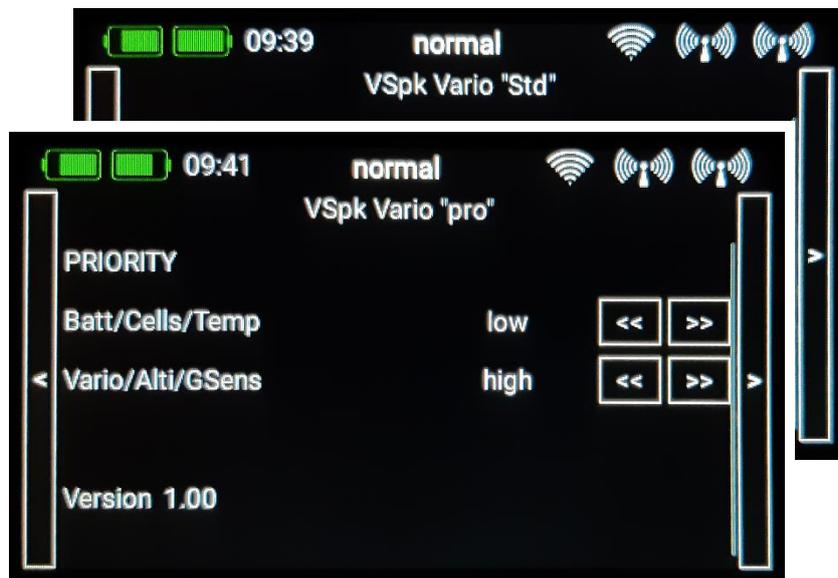


If there is a SD card installed, also the rate of ascend/descend will be logged.

### 3.1 Setup

All relevant settings can be made directly from the PowerBox transmitter.

The menu heading shows whether it is the standard version ("Std") or the "pro" variant of the VSpeak Vario.



#### **PRIORITY**

Here you can set the prioritization of the data request for the value groups: Batt/Cells/Temp and Vario/Alti/GSens.

You can choose between: low / high / higher / at highest

Changes to the parameters are only effective after a sensor rescan.

#### **Version #.##**

Current software version.

## 4 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).

**Note:** If a Micro SD card is inserted, the bootloader will automatically check for a possible new update. This test requires more time than the initialization of the P<sup>2</sup>Bus. So that both data logging AND data transmission at the P<sup>2</sup>Bus can be performed simultaneously, the function "Rescan Sensors" has to be executed at the Core when the receiver is switched on.

Some Micro SD cards might not function. A matching SD card can be purchased at [www.VSpeak-modell.de](http://www.VSpeak-modell.de).

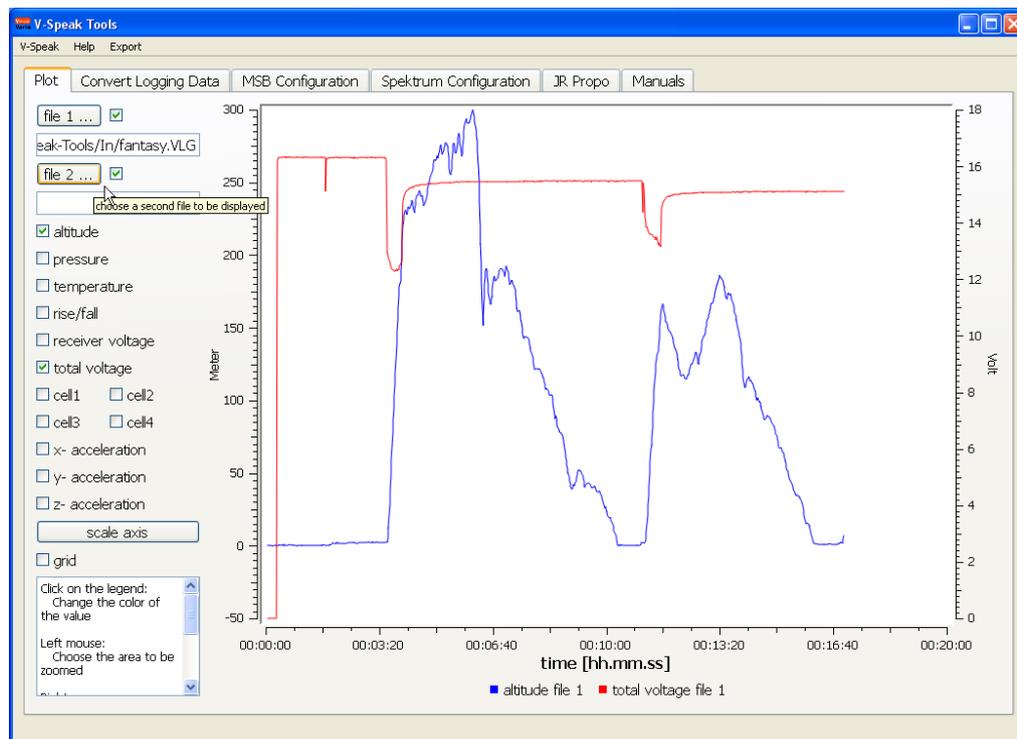
### 4.1 Logging rate

- 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:

### 4.2 Analysis of data using "VSpeak Tools"

Under [www.VSpeak-modell.de](http://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.

### 4.3 Analysis of data using "Logview"

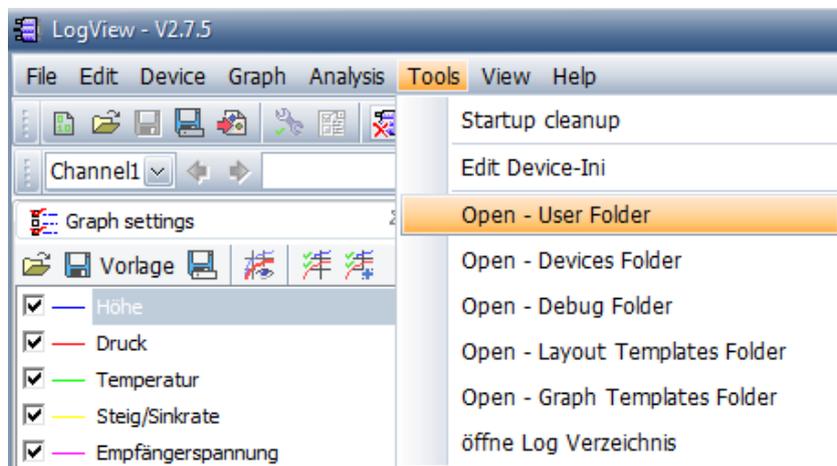
The binary saved log data must be converted using the program "VSpeak-Tools.exe" in csv spreadsheet format. CSV files can be opened by many programs such as Microsoft Excel, Open Office and many other programs. For the program Logview a configuration file is available, so that the data can be presented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

#### 4.3.1 Installation of Logview

If you haven't installed LogView yet you can download the current version at [www.logview.info](http://www.logview.info). Run the installation file and follow the instruction of the program.

#### 4.3.2 Installation of Logview for the VSpeak-Vario

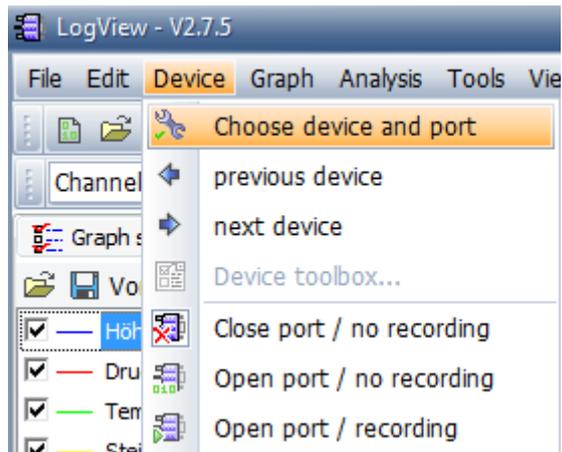
Start Logview. If you have reinstalled Logview you are asked for some settings through which can be skipped with "Next". Go to "Tools" "OPEN - User Folder" in the main menu.



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".



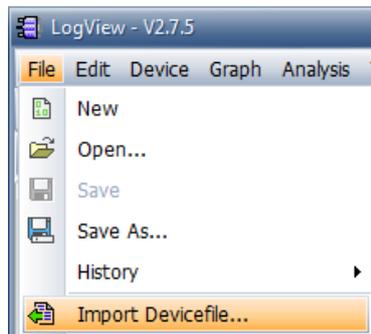
Close the window.

### 4.3.3 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).

#### 4.3.4 Importing the converted data in Logview

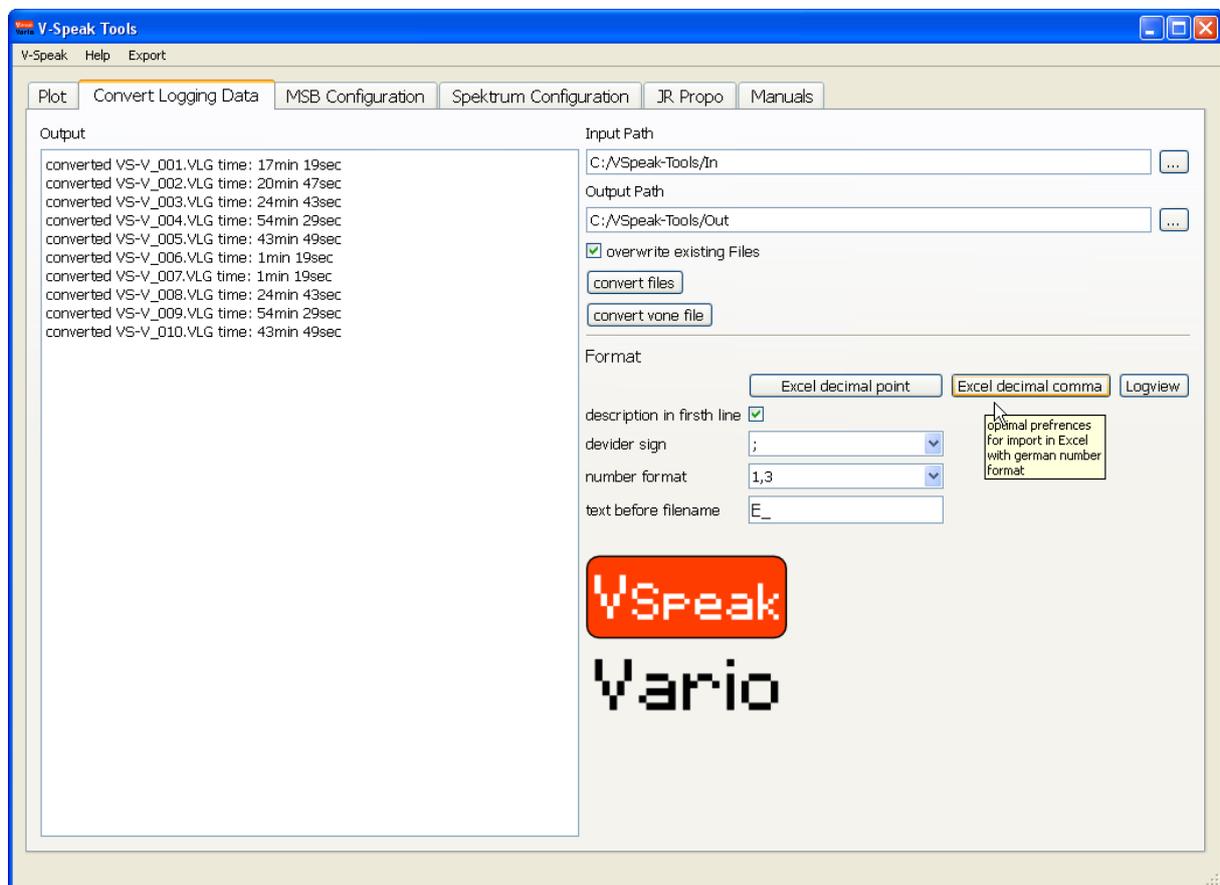
Open Logview and import the desired log file under "File" "Import Devicefile"



Select the CSV file (eg "VS-V\_001.csv")  
The values should now be displayed graphically.

#### 4.4 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.



## 5 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.

## 6 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](http://www.vspeak-modell.de).

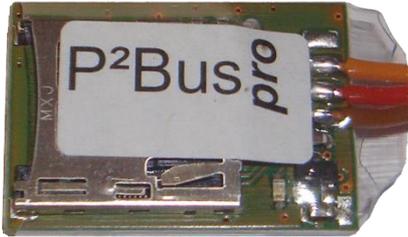
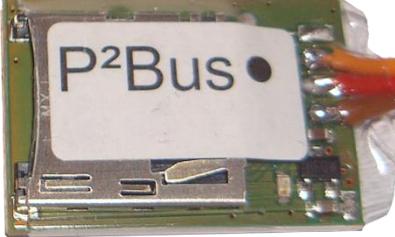
Also NOT included in the package are the on the page [www.vspeak-modell.de/variometer/accessories](http://www.vspeak-modell.de/variometer/accessories) listed balancer adapter cable - these can be ordered separately.

## 7 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)
		
acceleration	-24....+24 g	-8....+8 g

## 8 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 / JR servo plug input for telemetry connection on the receiver balancer adapter cable for max. 6 cells

## 9 Instructions for disposal



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

## **10 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, 2019/04/01

.....  
Signature  
Volker Weigt  
Managing Director

## **11 Version history**

Vers.-No	Date	Comment
1.00	04.2019	first retail version
1.01	09.2020	changed order of sensor values: first value now Vario

## **12 Contact**

Volker Weigt

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