

Quick start guide SensBox



Bräuniger GmbH Dr. Karl Slevogt Str. 5 D-82362 Weilheim

www.brauniger.com

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2. Operating elements



The present quick start guide is based on Firmware version 1.00.06. All technical data are subject to modifications. Please watch out on our website for new firmware versions and adaptations of this manual.

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3. General information

The *SensBox* is a universally usable *Sensor platform* for leisure activities in a wide and varied range. The measurements provided by this device serve as information for the user and are intended to support him in his activity. The instrument records his movements in 3D on a SD-card in the internationally common *.igc format. The *.igc file is provided with a digital signature which will make visible possible manipulations of the file.

The execution of all activities is however always carried out in one's own responsibility. Bräuniger GmbH may never be held responsible for a possible malfunction of the *SensBox* in no application whatsoever. The casing is waterproof. Therefore the *SensBox* can be used for all outdoor activities.

4. Startup

The *SensBox* is supplied with the following components:

- a. USB cable
- b. USB plug-in power supply for 100 ... 240 V~
- c. 4 GB SD smart card (inserted into the device)
- d. carrying pouch

Before the first switch-on of the *SensBox* please check if all parts are present. As the next step the built-in **Lithium-accumulator** should be charged once. For this purpose please connect the USB cable with the *SensBox* and the plug-in power supply. The charging process will be automatically stopped upon fully charged battery and will last several hours according to battery status. Due to the fact that it is a standardized USB interface, the *SensBox* can also be charged at other USB charge ports.



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5. Switching on/and -off the SensBox

Please press the On/Off key, the display shows „ON“, then press the „OK“ key for confirmation. The instrument will then automatically switch to operation mode via display of the device's serial number and of the installed firmware version.


Switch-off: if the Switch-on/-off key is pressed for at least 3 sec., the display shows „OFF“, which is then confirmed with „OK“. By this process all data are stored on the SD card.

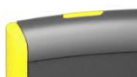


6. Firmware update

In general the *SensBox* is provided with the current firmware. However, because time and again improvements, or the removal of bugs require an adaptation of the firmware, it is recommended to watch for the currently valid firmware.

Upload of a new firmware: Switch-off the instrument. Insert the SD card with the new firmware file into the device.



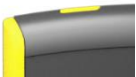
Press the  key and simultaneously press a long time the Switch-on/-off key.



The device queries OK? -> Confirm by pressing the  key.

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Reset: If the device does not perform as expected (crash of the firmware) one can

reset it by simultaneously pressing the keys  and  as well as the on-off  switch.

7. Selection and settings of display mode

Handling of the *SensBox* is in principle self-explanatory and easy. After switch-on the altimeter function is always displayed. The basic setting of the altimeter is adjusted in the factory to the **1013 hPa** standard. If display of the current altitude value for the respective location is required, the SensBox must be adjusted to the actual atmospheric pressure, such as any other barometric altimeter. This is performed in menu item *Air pressure*, unless the actual altitude value is known and can therefore be adjusted.

Each further pressing on the „OK“ key shifts to the next display mode. In the current firmware 1.00.06 are available 9 (10) modes:

- **Altimeter**
- **Variometer - optical and acoustical**
- **Air pressure (QNH)**
- **Magnetic compass**
- **GPS Speed over Ground**
- **GPS Position**
- **Time of day (UTC)**
- **Memory display**
- **Acceleration (momentarily not yet active)**
- **Volume**

According to the mode which is displayed, it may be necessary to execute an adjustment of the display.


This procedure is in principle the same for most of the display modes. Therefore it is exemplarily described and illustrated here in detail only once.

At this point the correction of altitude display is described.

As the altitude display is changed according to atmospheric pressure, it is necessary to perform a correction in order to have a correct barometric altitude display during a flight.

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The example presents on the display the altitude of 520 m, however, the actual altitude is 470 m.













- For access into the Set Mode the  key must be pressed for at least 3 sec. Then the *SensBox* is shifted to Set Mode, the altitude display is flashing.
- By use of the arrow keys „**up**“ or „**down**“ the altitude display can now be adjusted to the correct value – as far as known.
- Either confirm the value with „**OK**“ , or wait for 30 sec. until the flashing stops. The new value is automatically accepted.
- If no altitude is known, but the daily updated air pressure, it is possible to rectify this known value in mode "Air pressure". The proceeding is identical. Afterwards the altitude display is adjusted automatically.



Caution: all settings can also be performed by use of a small PC-Tool *SensboxConfig*. The programme is available for Windows and MAC-computers. The tool can be downloaded from our website free of charge, or it is downloaded directly from the SD card on which it is stored, such as this quick start guide. **Please refer to Notes on page 16.**

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8. Summary of operation levels

Function		Units $\uparrow\downarrow$ Arrow keys 	Set	Set Special
Alti, 	99999	m, ft, FL	Altitude	
Vario 	+/-99.9	m/s, ft/min*100		Filtering
Pressure 	1099.9	hPa, inHg	QNH	Offset
Compass or Track 	359° N	Only °	Compass or Track	Calibration
Speed 	999.9	km/h, mph, kt		
Position 	47°N -> 15.387°N -> 8°E -> 17.389°E	dd°mm.mmm'		
Time of day 	23:59	Europe, America	UTC Offset	
Flight time, Recording time 	9:59:59		Automatic, Semi-automatic, Manually,	
Memory 	0-99%	Level, free storage space	Recording interval	
Pairing 	5-3 (number of partners – partner- number)	Flylink or BlueTooth		
Volume Buzzer 	0 up to 4	Louder/Lower step as number	Audio Settings	More Audio Settings

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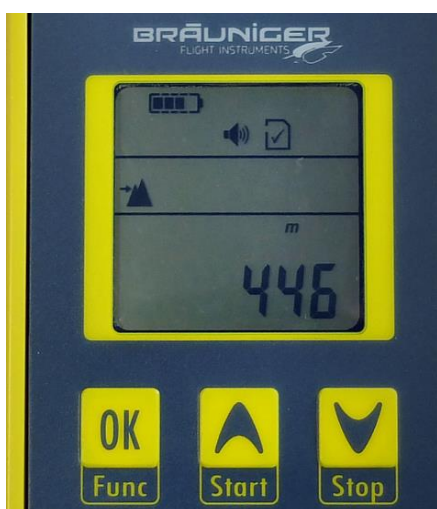
9. Description of single modes

7.1 Altimeter

The barometric altitude is displayed through an air pressure sensor.

The altitude value can be displayed in meter = **m**, or feet = **ft**.

Switching of measurement unit is performed by one of the arrow keys.



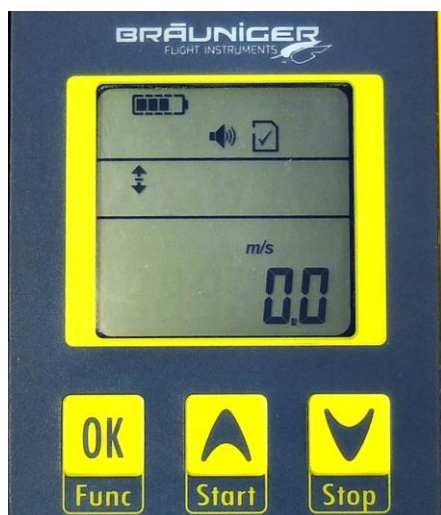
◀ Active functions

◀ Selected mode

◀ Measurement or default value,
presently altitude 446 m

7.2 Variometer

The Vario display is presented exclusively in digital form. In addition the SensBox is equipped with an acoustical Vario for rise and sink rates. The volume can be modified in Acoustic mode. For this reason the *SensBox* is also ideally suited as **Back-Up Vario** for paraglider and hang-glider pilots.



◀ Vario display: 0.0 m/s

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7.3 Air pressure display

The current air pressure **QNH** can be displayed in **hPa** as well as in **inHg**. The necessary adaptation is performed as described under point 7.



◁ Air pressure display 28,03 inHg

7.4 Magnetic compass

Display is executed digitally in degrees.



◁ The SensBox points in longitudinal axis to 178°

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7.5 GPS – Speed over Ground.

Through the **GPS** module Speed over Ground is displayed in case of active satellite reception. Display can be made in **km/h** – **mph** – **kt** – **m/s**. Selection is performed by use of the arrow keys.



◀ Speed: 0,0 km/h

7.6 Position by GPS

In case of active satellite reception the current position is displayed here once in the northern „N“ or „S“ position, and by pressing the arrow key the „E“ or „W“ position in format **degrees, minutes, seconds**.



◀ Position: 47° 44' 00" N and
12° 52' 47" E (East)

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7.7 Time of day

At this item is displayed the **UTC time** which is synchronized via satellite. The adaptation to local time in steps of $\frac{1}{2}$ h is possible in Setmode.



◀ Time display 7:23:01

7.8 Recording memory

At this item is displayed the storage space of the inserted SD card in percent. In addition it is possible to adjust here the recording interval and the start conditions. The following modes are available, for which respectively a scanrate of 1 – 2 – 3 – 5 – 10 – 30 sec needs to be adjusted:

Mode O = Manual start and stop by use of the keys, recording termination and saving on SD card must be confirmed with OK key.

Mode I = Recording begins immediately after switch-on with pre-selected scanrate.

Mode A = Automatic if the following value changes are present:
10 km/h GPS speed or
1,5 m/s Vario deflection or
30 m change in altitude.

The recording rate is set in Set Mode for each mode.

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◀ Memory space 0 %

7.9 G-Display

This item displays the maximum acceleration up or down to which the *SensBox* was exposed during a flight or trip. As from firmware FS 01.08 the display will shift in Compass mode to ACC = acceleration by pressing the arrow key. The feature G-Display is not yet activated on the actual firmware.

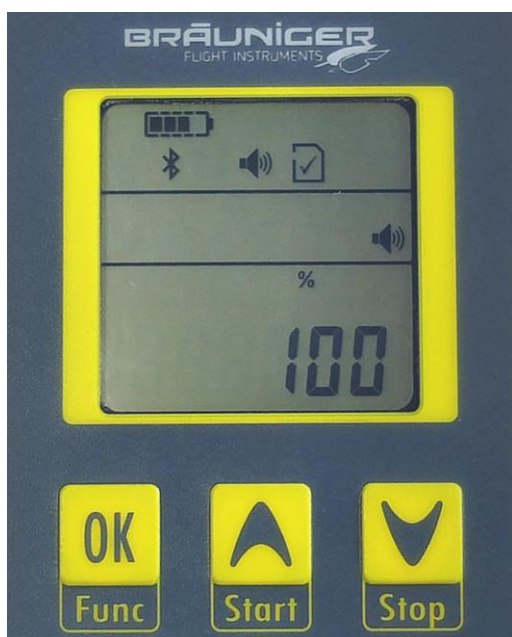


◀ acceleration 1.0 G = neutral position

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7.10 Acoustic mode

This item allows for adaptation of the Vario volume. Display is effected in percent and is performed by the arrow keys only.



◀ set value 100%

The acoustic mode has even more filter settings in the extended Setmode. However, these settings should be entered by PC in the *SensBox* Tool Programme.

10.Data transfer via Bluetooth 4.0 LE

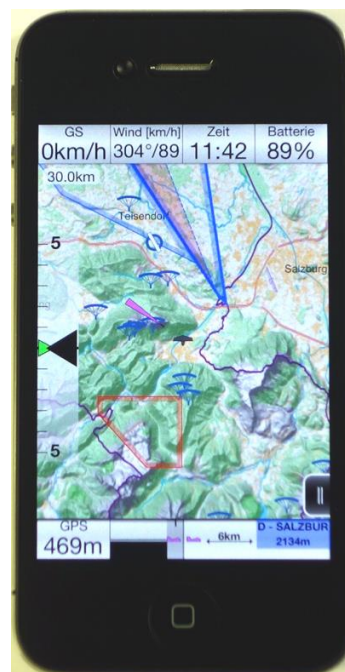
The *SensBox* is fitted with the new *Bluetooth - Mode 4.0 LE* (Low Energy). This mode allows for a very energy-efficient data transfer within the near field range, such as already standard on new **smartphones** and **tablet –PC** devices, or is expected to become standard.

After switch-on the *SensBox* will try to connect with a device being present within reach = pairing. This is visible by the flashing Bluetooth symbol. Apples *iPhone 4S* as also *iPad* are already fitted with this standard.

Android based smartphones are to follow. For the Apple devices a very efficient *app* of flight navigation programme called „*freeflight*“ is available from *Butterfly-Avionics*. On purchase of the *SensBox* the access code for this *app* is already included.

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As soon as an *iPhone* with this *app* is recognized by the SensBox, all flight-related sensor data are transmitted live to the *iPhone*. In addition to a map presenting all Restricted Areas are also illustrated besides Vario, altitude, GPS-speed other extensive navigation aid information. There is the possibility to manage and display flight plans, such as Routes, Waypoints etc.

[illegible]

11. Evaluation of recorded flight- or trip data

The *SensBox* saves according to application a flight or trip as *.igc file. All flights are automatically stored on the SD card. Due to this SD card it is possible to read-out these data independently from the operation system on any PC being equipped with SD card slot, or by use of the USB cable. It is only necessary that the computer is fitted with a tool which allows for read-out of *.igc data and to convert them if applicable into Google Earth files.

For Windows equipped computers our programme *Flychart* is well suitable for the presentation and evaluation of the flight files, as also for upload to Google Earth.

There are also very simple tools available which only convert the *.igc file into a Google *.kml file.

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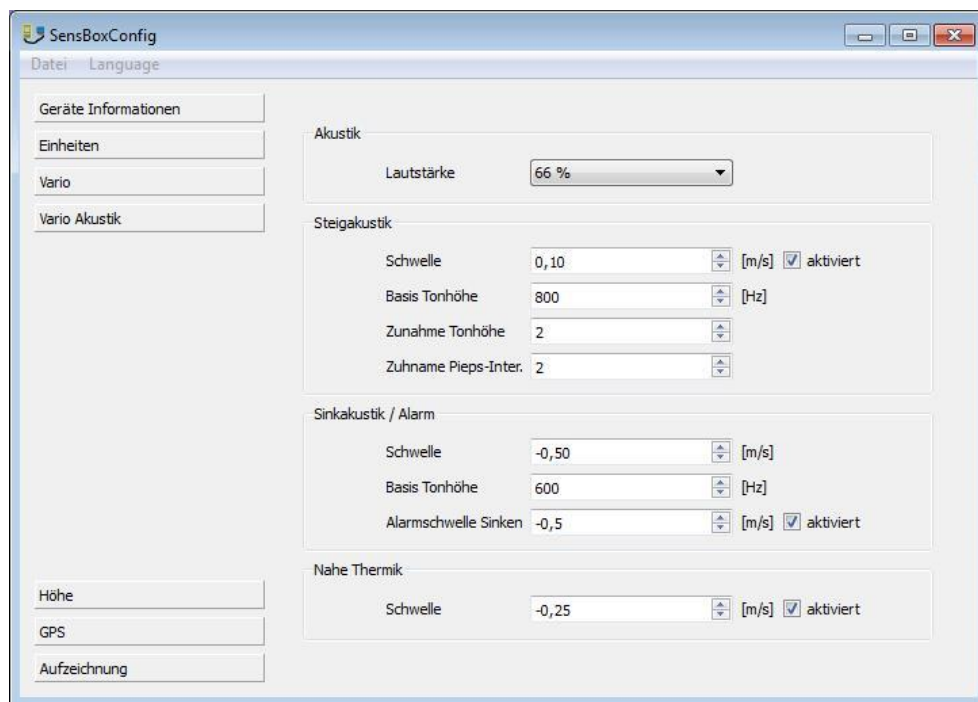
12. Technical data

Altimeter:	resolution 1m - up to 11000 m / ft
Digital Vario:	+/- 99,9 m/s
Acoustical Vario:	variable volume
Air pressure:	up to 1099,9 hPa (inHg)
Speed (GPS):	1 up to 1800,0 km/h, (mph, kt, m/s), resolution 0,1m/s
IGC Logger:	up to approx. 24 hours with 1 s recording rate in internal memory, unlimited on SD card Auto / Semi-Auto / Manual. Max. 35 flights per calendar day
Compass:	359° N
Position display:	format: dd°mm'ss"
Time of day:	23:59 Europe and US with UTC Offset, also ½ h.
Dimensions:	62 x 121 x 17,5mm
Weight:	137 g

13. Guarantee

The guarantee period is 24 months. In case of failure please forward the device to a Bräuniger dealer, or send it directly to Bräuniger. For more details please contact directly Bräuniger GmbH.

14. Notes



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Screenshot of *SensBoxConfig* tool, menu Acoustic with diverse settings.

Screenshot of a very simple igc for kml converter programme: www.maddyhome.com

It is only required to select the igc or gpx file and to click the button „Generate KML“
This generates a Google Earth File which immediately starts the upload.