

Logstream

VR1



electronic digital glider variometer

hardware version: 4.1
firmware version: 2.0

manual version: 2.0

March 2024

Logstream VR1 is standalone digital acoustic variometer. The unit has standard dimensions to fit into a glider panel - 57 mm diameter (2¼"). The unit is equipped with a precise digital pressure sensor and a fast 32-bit microprocessor for very accurate indications. The data is displayed on a very high brightness LCD screen. VR1 is equipped with a rotary knob with a pushbutton for controlling the device.

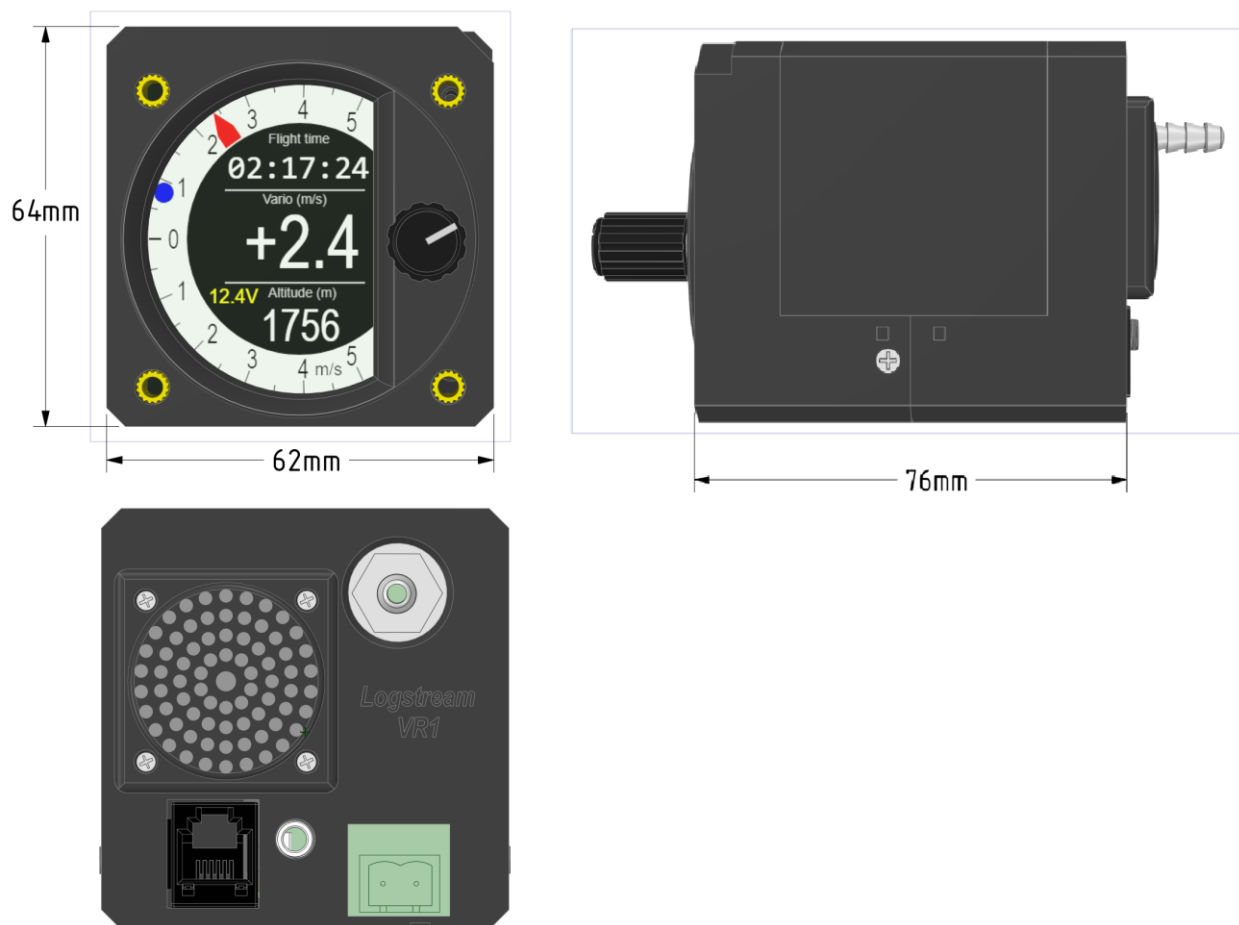
Main features.

- dimensions 65x63x80 mm weight 210g
- precise digital pressure sensor
- fast 32-bit microprocessor
- 1 pressure transmitter ((TEK) or static tube)
- 2.4" display with very high brightness
- rotary knob with a button
- internal speaker
- the ability to connect an external speaker
- UART TTL and RS232 external communication interface
- FLARM warning display
- glider polars database
- Speed to Fly calculator

Technical data.

- 8-16V DC power supply
- consumed current:
 - 100mA 12V - display brightness to minimum without audio
 - 180mA 12V - maximum display brightness without audio
- mounting in a standard 57 mm hole

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System

Knob

The knob with the button is the basic way of communication with the device. Turning the knob changes the currently set parameters and pressing it accepts the introduced changes or moves to the selected menu level.

Starting the device

Depending on the settings made, after connecting the power supply, the device:

- 1) Starts up and stays in normal operation
- 2) Starts up and goes to sleep (screen off, limited power consumption)
- 3) Pressing the button on the knob wakes the device up from the sleep mode and returns it to the normal operation mode

Turning off the device

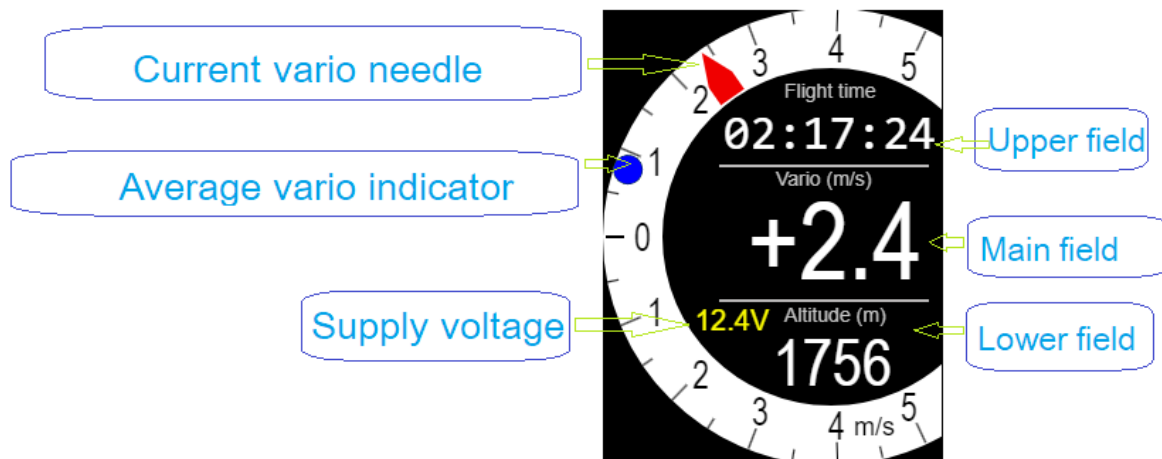
- 1) By pressing and holding the button on the rotary knob for 4 seconds
- 2) By selecting "Power off" in the main menu

Graphical user interface

Modes of operation

The device works in 3 modes:

- 1) Main screen mode
- 2) Setting mode
- 3) Sleep mode



Main screen mode

In this mode, the vario indicates:

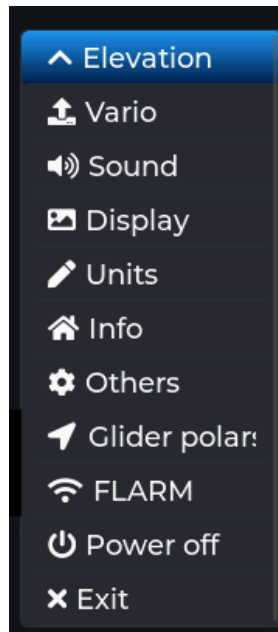
- the current vario value by deflection of the red needle
- the average vario value by moving of the blue circle indicator
- selected values in the upper, main and lower information fields
- supply voltage of the device in the form of a yellow value in the bottom field

Vario scale range (2.5, 5.0, 10.0 m/s) is user adjustable.

Turning the knob in this mode increases (**right**) or decreases (**left**) the volume.

Pressing the knob in this mode takes you to the MC and ballast setting screens or setting mode.

Settings mode



- Elevation** – setting the current elevation
- Vario** – settings of vario parameters
- Sound** – settings of sound parameters
- Display** – settings of display parameters
- Units** – measurement units settings
- Info** – display information about the device
- Others** – other settings
- Glider polars** – glider polars database
- FLARM** – FLARM warning
- Power off** – putting the device into sleep mode
- Exit** – exit to the main screen

If the [X] sign appears on the left side of the menu, it means that the device settings saving lock is active. They can be modified, but they will not be remembered after the power is turned off.

If a number (1 – 62) appears on the left side of the menu, it indicates the number of the currently loaded settings profile.

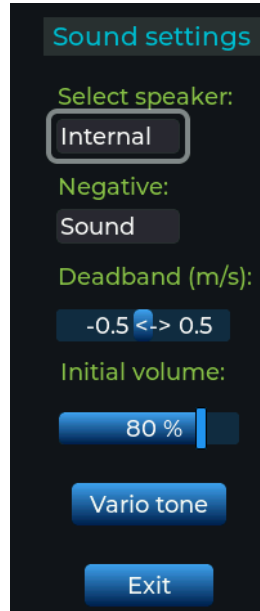
No movement of the knob for more than 10 seconds automatically returns you to the main screen!

Vario screen



- Filter** – sensitivity of the variometer, the lower the value, the more sensitive the device is. At the beginning we suggest a value of 1.5s
- Averager** – average vario. Set how many seconds to take the average
- Range** – variometer scale (2.5, 5.0, 10.0 m/s)
- Nmea out** – format of data sent outside via the UART port

Sound screen



- Select speaker** – selection of the speaker output
- Negative** – whether the device should generate sound or not when the current vario value is negative
- Deadband** – the range (+/-) of the vario indication from 0m/s up and down, in which no sound is generated

Initial volume - default volume when the device is turned on. During the flight, you can easily change the volume by turning the knob on the main screen

Vario tone - sound parameters

Exit - exit to the main menu

Vario tone screen



Tone shape - sound wave shape.

Sinus - better for a larger external speaker,

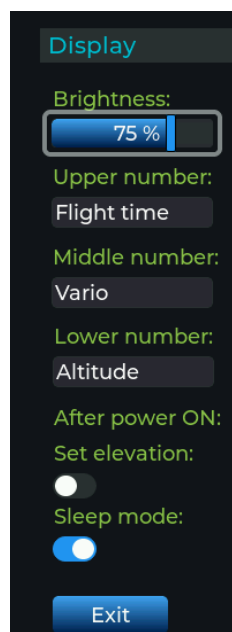
Triangle - better for a smaller internal speaker

Freq at 100% - sound frequency for maximum lift

Freq at 0% - sound frequency for zero lift

Freq at -100% - sound frequency for maximum sink

Display screen



- Brightness** – display brightness 5%-100%
- Upper number** – type of information displayed in the upper field
- Middle number** – type of information displayed in the main field
- Lower number** – type of information displayed in the lower field

Types of values that can be displayed:

- Vario** – current vario
- Average vario** – average vario
- Altitude** – pressure altitude
- Pressure** – current atmospheric pressure
- Flight time** – time of flight (since device power up)

Set elevation - when this option is turned on, the elevation setting screen is always displayed after connecting the power supply

Sleep mode - when this option is turned on, the device goes into sleep mode immediately after connecting to the power supply (from which you can exit by pressing the knob)

Units screen



Here we can set which units the data will be presented:

- Vertical speed** – vario units
- Altitude** – altitude
- Pressure** – atmospheric pressure

Screen Info

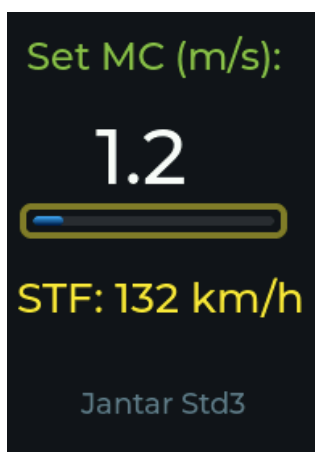
This screen shows the device data. Eg. hardware and software version. Turning the knob moves to the next sub-screens.

Glider polars screen



Select the type of glider on which the variometer was installed. After selecting the appropriate glider type, the Speed To Fly functionality will be available. Selecting the first item on the list marked "-----" will cause the Speed To Fly function to be disabled.

When selected the type of glider we are flying and the STF function is active, after pressing the knob on the main screen we go to the screen for quick setting of the current MC (McCready) value. By turning the knob we change the MC value. If the selected type of glider has the option of flying with water ballast, pressing the knob again takes to the screen where can use the knob to set the current ballast level (in percent). Based on the previously set MC value and ballast, system calculates optimal speed to fly between thermals for a given type of glider.



FLARM screen



FLARM ON/OFF

Alarm sound

- FLARM warning sound volume

Warning level

- FLARM alarm level at which the reaction occurs

all levels

- active is level 1 2 and 3

2 and 3

- active is level 2 and 3

3 only

- active is only level 3

(most important)

Baud rate

- RS232 port to FLARM receiver baud rate

Test alarm

- operation test of the selected FLARM alarm level

Example FLARM warning screen



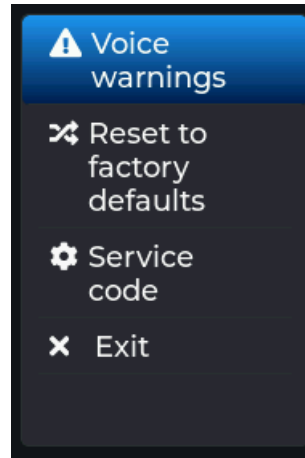
Warning Color:

- red (alarm level 3) 0 -10 seconds to impact
- yellow (alarm level 2) 10-15 seconds to impact
- green (alarm level 1) 15-20 seconds to impact

The flashing filled circle shows the direction relative to the nose of the glider from which the threat is approaching. Information about the type of obstacle is displayed in the center (Aircraft - aircraft, Obstacle - terrain obstacle) and the distance to the object or obstacle in the horizontal plane in meters. On the right side of the screen, a red rectangle graphically shows at what angle an approaching object or obstacle is above or below the glider and at what height above or below the glider it is located (in meters).

ATTENTION !!! When the FLARM function is enabled and at the same time the variometer does not receive correct data from the FLARM receiver, a red warning appears on the main screen.

FLARM
ERROR



Load pilot settings screen

Allows to load one of 62 individual variometer parameter settings. If a given pilot wants to save its individual device settings, they must first be loaded in the Load pilot settings menu. Then, all changes made to the device settings will be saved under this number. Before the next flight, simply load them by selecting the appropriate settings slot number in the Load pilot settings menu.

Voice warnings screen

The variometer can provide a voice warning/reminder about closing/opening the glider landing gear.

After tow release - selecting this option enables the function of reminding you to close the landing gear after releasing it from the tow. After exceeding the altitude entered in the Upper altitude field, the variometer will generate (only once during the flight) a voice reminder about the landing gear.

Before landing - selecting this option activates the function of reminding you to open the landing gear before landing. After exceeding the altitude entered in the Lower altitude field (during descending) , the variometer will generate (only once during the flight) a voice reminder about the landing gear.

Upper altitude - enter the altitude beyond which the variometer will generate a voice reminder about the landing gear. Default 700m

Lower altitude - enter the altitude beyond which the variometer will generate a voice reminder about the landing gear. Default 200m

Test warning - pressing generates a warning

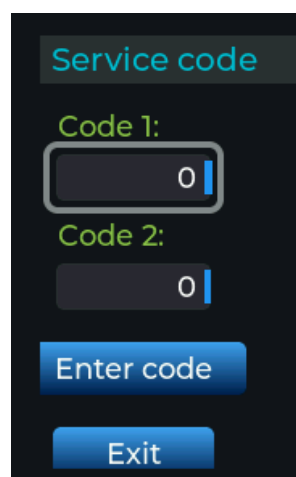


Menu **Reset to factory defaults**

Selecting this menu option resets the device settings to the default (factory) settings.

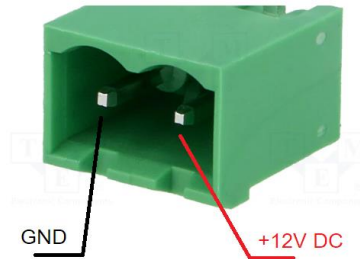
Service code screen

The screen is used to enter the service codes received from the manufacturer in order to perform service activities (e.g. automatic device diagnostics). Do not enter any values here alone.



Connectors:

Power supply.

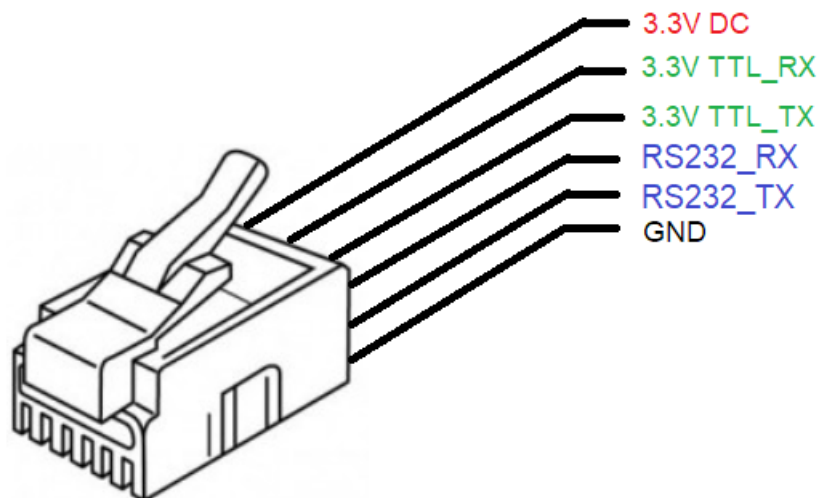


10-16V DC socket (5.08 mm)

The device has a built-in 0.75A resettable fuse.

An external 1.5A fuse is recommended

RJ12 communication port:



Pin 1 – DC 3.3v voltage output. Maximum allowable load 100mA

Pin 2 – UART RX input, TTL 3.3v voltage levels

Pin 3 – UART TX output, TTL 3.3v voltage levels

Pin 4 – RS232 RX input, RS232 voltage levels

Pin 5 – RS232 TX output, RS232 voltage levels

Pin 6 – Ground (GND)

ATTENTION !!!

Incorrect connection of an external device to the variometer, e.g. connecting an RS232 signal to the 3.3v TTL input, will **irreversibly damage the variometer!!!**

To connect FLARM receiver use only pins 4 and 6.

Installation of the device in the glider:

The device should be mounted in a standard mounting hole (57mm) using the attached screws.

ATTENTION !!!

The mounting holes on the left side of the device (upper and lower) are only 4mm deep. Therefore, it is absolutely necessary to use the attached M4x6mm screws, assuming that the cockpit plate is at least 2mm thick. **Using longer screws will damage the display screen placed directly behind the holes !!!**

Pressure:

Connect to the pressure grip with a flexible hose with an internal diameter of 6 mm pressure with:

- TE probe, if possible
- static pressure in the absence of the TE probe

When connected to the TE probe, the variometer will indicate the lift value compensated, i.e. corrected for the increase/decrease in the glider's total energy caused by the change in its speed. The quality of compensation then depends on the quality of the TE probe and the tightness of the probe's pneumatic system. The installation must be leak-proof.

ATTENTION !!! in this case, due to the fact that the pressure provided by the TE probe is different from the static pressure, the barometric altitude indicated by the variometer during the glider flight will be shifted relative to the actual altitude (on the ground in a stationary glider, the indication will be correct).

External speaker:

External speaker 8.00hm 2W, 3.5mm mono Jack connector is connected to the audio jack on the back of the device. In the Audio options, set the Speaker sound output to **External**.

Firmware update:

When a new version of the device firmware is available, the manufacturer will send the user a binary file with update instructions.

Contact:

mail: office@logstream.eu
www.logstream.eu



Electronic digital variometer Logstream VR1

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