FenixS

User's manual for advance and basic version

version 1.0

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Revision History

The following table shows full description of changes made in this document.

DATE	DESCRIPTION
October 2021	- Initial release of document

Contents

1 Introduction

The FenixS is a digital vario-navigation unit. It features round "2.1"inch display which is fully visible during direct sunlight conditions.

Smart user interaction with the FenixS unit requires only one rotary knobs. With a built-in multi-language voice module, the FenixS offers the pilot voice warnings, alerts, GPS Info, thermal assistant, Flarm visual support, gliders data base and lot's more.

Depending on, what features the pilot requires in the unit, it can choose between basic and advance version of the unit.

Below is the short list of the FenixS functionality:

- ➢ Display of GPS info
- ➢ Internal beeper for Flarm warnings
- ➢ Integrated voice module
- ➢ Single rotary-push knobs for user interface
- ➢ Two data ports for 3rd party devices (FLARM, Wireless module...)
- ➢ Side facing micro SD card port for updates
- ➢ Internal rechargeable battery for short time power supply backup **as an option**
- ➢ Vario information over TE probe connection
- ➢ Speed to fly function
- ➢ Final glide calculator
- ➢ Internal glider database
- ➢ Thermal assistant
- ➢ Logbook
- ➢ Wind calculation
- ➢ Multi language support

NOTE

FenixS is not IGC certified device.

1.1   Version differences

The following table will show supported features between FenixS versions.

FUNCTION	BASIC	ADVANCE
Vario needle	YES	YES
Vario sound	YES	YES
Settable navbox on the main page	YES	YES
Wind indicator	NO	YES
FG calculator	NO	YES, needs external GPS source
SC tone and arc	NO	NO
Setup menu	YES	YES
Volume control	YES – directly on knob	YES – via quick menu
MC/Ballast/Bugs set	NO	YES – via quick menu
Speed to flay calculator	NO	YES
Thermal Assistant	NO	YES, needs external GPS source
Flarm radar + warnings	NO	YES, needs external Flarm unit
TP navigation	NO	YES – to take-off position. External GPS source is needed
APT navigation	NO	NO
TSK navigation	NO	NO
Logbook / Statistic	NO	YES
GPS info page	NO	YES
Init screen	Yes – elevation + QNH	Yes – elevation + QNH
Voice announcements	NO	YES
Data input	Bluetooth module	Bluetooth module + external GPS / FLARM unit

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2　Basic operation

In the following section we will provide more details of the FenixS unit. We will present you the easiest way to start up using your new device and its features.

2.1　Powering up

To turn on the device, no interaction is needed. After connecting main power supply to the unit power leads, the unit will automatically start up.

Once turned on, the following screens will appear on main display:

- ➢ Intro screen (Advance or Basic – depending of the version)
- ➢ Basic initial setup page, where user will set next options:
  - **Set Elevation –** set take-off elevation.
  - **Set QNH –** set current air pressure.
  - **Info –** displaying active glider and reserve setting **(Advance version only)**

2.2   Front view

Figure 1: Reference front view of device (FenixS intro screen)

- ➢ **1 –** Main round screen
- ➢ **2 –** Device version
- ➢ **3 –** Rotary knob with push function

2.3   User interface

Only one rotary knob is used by the pilot to interact with the unit. To get more understanding of its use, we will describe all functions in next sub-sections. Knob can be turned clockwise CW or counter clockwise CCW with addition of a central push-press operation.

2.3.1   Rotary knob

Following functions are possible with use of rotary knob:

ADVANCE VERSION

➢ Rotation will change pages or change values in edit fields.
➢ Short press for confirmation, entering sub-menus and confirming edit values.
➢ 2 seconds press will perform exit from sub-page or enable the pilot to customize navbox displayed data on main page.

BASIC VERSION

➢ Rotation will change vario volume.
➢ Short press for confirmation, entering to settings menu and confirming edit values.
➢ 2 seconds press will perform exit from sub-pages or enable the pilot to customize navbox displayed data on main page.

2.4   Software update

New updates will be published on website www.rc-electronics.eu After downloading update file, copy it to dedicated micro-SD card and use update procedure below:

➢ Shutdown device by cutting off power delivery.
➢ Insert micro-SD card in the side slot of the device.
➢ Restore power delivery and wait for update to complete.
➢ After successful update, micro-SD card can be removed.

NOTE

During software update, keep external main input power present.

2.5   Device shutdown

When main supply voltage is turned off, unit will turn off automatically.

2.5.1   Loss of main power during flight

Short interruption of main power can accrue during the flight when pilot switches from primary to secondary battery. In that time the FenixS unit may turn off, if it doesn't have internal backup battery (as an option). If internal battery in installed, then unit will continue with its operation. Internal battery can maintain all FenixS functions for additional 30min.

3   Page overview

Each page was designed in such a way as to give best user experience and to be clear to read display.

In the unit, displayed pages are selected / changed with rotation of rotary knob. Some pages also have sub-menus. To access sub-menu, use short press on rotary knob. After finish customization in the sub-menu, simple long press on rotary knob will perform exit. Sub-menu can also be exited by or selection of "Exit" option.

3.1   Main page

Main page displays all needed flight information. It can display up to three digital numeric navbox information on main screen.

Together with digital numeric information there is also wind indicator (direction and speed).

Additional, status displays BT connectivity, battery level, GPS reception and Flarm connectivity.

Figure 2: Reference view of main page.

Description:

1.	Vario needle	**BASIC AND ADVANCE**
2.	Average vario indicator (blue circle)	**BASIC AND ADVANCE**
3.	MacCready setting indicator (yellow circle)	**ADVANCE**
4.	Thermal vario indicator (green circle)	**ADVANCE**
5.	Wind, Flarm, GPS and BT module status	**ADVANCE**
6.	Vario scale	**BASIC AND ADVANCE**
7.	Vario scale units and type of needle (VAR – vario)	**BASIC AND ADVANCE**
8.	Battery status indicator with name of the page	**BASIC AND ADVANCE**
9.	Thermal mode icon	**BASIC AND ADVANCE**

3.1.1 Digital numeric navigation information

Central view area of the main screen is used to display digital numeric information. The pilot can set up to three digital numeric values at the same time on the main screen.

Figure 3: Displaying one information on the screen.

Figure 4: Displaying two information's on the screen.

Figure 5: Displaying three information's on the screen.

3.1.2   Flight mode

The status icon at bottom right of the vario screen always indicates the thermal flight mode.

Figure 6: Displaying thermal flight mode.

3.1.3   Needle unit's

Main needle units can be view at the right top side of the battery status screen. Selection can be made between **m/s** or **kts**. Changing the Vario climb units is described in **Sub-paragraph 3.2.2.3.**

Figure 8: Vario units in kts.

Figure 7: Vario units in kts.

3.1.4   Wind and connectivity status.

A small section of the main screen is used to constantly display wind information and the status icons. For the pilot, wind information includes values of wind direction and speed. These values are represented graphically and numerically in a small half circle on the left side center of the main screen.

Wind indication features:

➢ **Wind direction –** pointer, to show wind direction relative to current track.
➢ **Wind speed –** displayed numerically in the selected user unit.
➢ **Wind absolute direction –** displayed numerically in degrees.

Connectivity status icons represent current mode of GPS reception, Flarm and Bluetooth module. Every module has its own represented icon. Flarm and Bluetooth connections are fully operating if icons are displayed. For GPS reception, green color will indicate 3D mode, while red will indicate no or 2D GPS fix.

Figure 9: Wind and connectivity status view.

3.1.5   Battery status

Battery status indicator displays battery voltage level of the FenixS. Indicator will be displayed in following modes:

➢ **FLASHING MODE –** indicates that the FenixS is currently powered by integrated battery.
➢ **STATIC MODE –** indicates that the FenixS is currently powered by external power. Internal battery (if integrated), will be automatically charging during this mode.

Different color of indicator shows different current charge state of internal battery:

➢ **RED –** will indicate near empty battery.
➢ **YELLOW –** will indicate half empty internal battery.
➢ **GREEN –** will indicate fully charge internal battery.

3.1.6– Navbox subpage

The sub-menu "**Select navbox**" is where pilot can set number of navboxes and type of navbox displayed. To enter "**Select navbox**" sub-menu, pilot must use long press function while on main page.

Figure 10: Page to set navbox information view.

3.1.6.1   Customizing displayed navigational data

Information displayed on main screen are specified by **"Set navbox"** sub-page. By confirming selection, display will show main page for customization of displayed navigational data.

Figure 11: Option for change navigational informational.   Figure 12: Main page ready for customization.

Once on main customization page, first position of navbox data will be colored yellow. This gives indication of current selected navbox position, ready to be customized. Pilot can scroll this indicator through displayed navbox data by rotating rotary knob.

With the indicator position set, confirm selected position by pressing knob to continue setting customization.

On **Select navbox** subpage**,** pilot can scroll through the navigation list of data.

Figure 13: "Select navbox" page.

Selection can be made between the following data. Short press on rotary knob will confirm selection.

➢ UTC Time	➢ Local time	➢ Flight time	➢ Leg time
➢ Task t. left	➢ Task t. left	➢ Altitude	➢ Alt. QNH ft
➢ Flight level	➢ Thermal gain	➢ Flarm alt.	➢ Distance Tp
➢ Distance Apt	➢ Distance Tsk	➢ Distance Nrst	➢ Flarm dist.
➢ Final glide Tp	➢ Final glide Apt	➢ Final glide Tsk	➢ Final glide Nrst
➢ TAS	➢ IAS	➢ Ground speed	➢ Speed to fly
➢ Vario	➢ Vario avg	➢ Vario netto	➢ Vario relative
➢ Thermal avg	➢ Thermal max	➢ FLARM vario	➢ Track
➢ Bearing Tp	➢ Bearing Tsk	➢ Bearing Apt	➢ Bearing Nrst
➢ OAT	➢ ENL	➢ G-force	➢ F.ID
➢ Efficiency(L/D)	➢ Tp req.L/D	➢ Apt req.L/D	➢ Tsk req.L/D
➢ Nrst req.L/D			

NOTE

Pilot can simply return or exit currently view page by long pressing rotary knob.

3.1.7   Main page sub-menu

To access the sub-menu for adjusting MacCready, Ballast, Bugs, QNH, and Brightness both FenixS versions have a different approaches.

ADVANCE VERSION
➢ On advance version of the FenixS, the pilot must use short press to enter sub-menu on main page. Value can be then change by rotating the rotary knob in CW or CCW direction. Every additional short press on the rotary knob will confirm last set value and jump to the next setting.

BASIC VERSION
➢ On basic version of the FenixS, rotating the rotary knob will automatically change the main page view to the volume dialog.

Volume Vario setting.
(Supported on Basic and Advance version)

Figure 14: Volume Vario set view.

MacCready setting.
(Supported only in Advance version)

Figure 15: MacCready set view.

Ballast setting.
(Supported only in Advance version)

Figure 16: Ballast set view.

Bugs setting.
(Supported only in Advance version)

Figure 17: Bugs set view.

QNH setting.
(Supported on Basic and Advance version)

Figure 18: QNH set view.

Brightness setting.
(Supported on Basic and Advance version)

Figure 19: Brightness set view.

3.2　Setup page

At setup page, configurations for system and user settings can be customized. The setting are saved into internal device memory, so they needs to be entered only once.

In the **Advance** version, the pilot must rotate rotary knob to the **Setup** preview page.
In the **Basic** version, to enter in the setting sub-page, only a short press on the rotary knob must be made.

Figure 20: Setup page view.

NOTE
Setup preview page is only visible in Advance version of the FenixS.

3.3   Settings

Settings includes following sub-menus:

ADVANCE VERSION

➢ Pilot	➢ Glider	➢ Vario/SC
➢ Voice	➢ Pages	➢ Data port
➢ Units	➢ Localization	➢ Info
➢ Password		

BASIC VERSION

➢ Vario/SC	➢ Units	➢ Localization
➢ Info	➢ Password	

3.3.1   Pilot

In the **Pilot** sub-menu, settings can be made for:

➢ Weight	➢ Reserve

<div style="border: 2px solid orange; padding: 10px;">

WARNING

Due to the direct impact of Reserve altitude on the final glide calculation, always make sure prior to take-off that the Reserve altitude is set to a value you are comfortable with.

</div>

3.3.2   Vario /SC

In the **Vario/SC** sub-menu, functionality of the Vario can be set and the following variables adjusted:

- ➢ **Zero frequency** – the frequency tone generated by device on displaying vario at 0 m/s.
- ➢ **Positive frequency** – the frequency tone generated by device on displaying vario at max range.
- ➢ **Negative frequency** – the frequency tone generated by device on displaying vario at min range.
- ➢ **Test audio** – selected option will output the tone from the negative frequency to the positive frequency, allowing the pilot to hear current frequency range and adjust it if needed.
- ➢ **Range** – lets the pilot adjust the current scale of selected vario unit (In the case of kts numbers 5, 10 or 20 can be set as scale). The same principle applies to other units.
- ➢ **Filter** – increasing or decreasing this number will have an influence on variometer response. A smaller value will make the variometer more responsive to small changes, while a larger value will do the opposite.
- ➢ **Integration time –** interval for calculating average vario.
- ➢ **Vario silence –** the sound of vario will not be produced below this set value. This helps the pilot to not be distracted from small changes in areas of the zero. This feature can be turned off or set between:
  - ○   -0.1 kts to -4.0 kts (For kts units)
  - ○   -0.1 m/s to -2 m/s (For m/s units)

3.3.3   Units

The displaying units for every numeric and graphical displayed indicator are adjusted in the **Units** sub-menu. The following settings can be made on indicators:

➢ **Altitude**
Optional units:
  o ft
  o m

➢ **Climb rate**
Optional units:
  o m/s
  o m

➢ **Speed**
Optional units:
  o km/h
  o mph
  o kts

➢ **Wind speed**
Optional units:
  o km/h
  o mph
  o kts
  o m/s

➢ **Distance**
Optional units:
  o km
  o nm
  o mi

➢ **Pressure**
Optional units:
  o hPa
  o inHg

➢ **Temperature**
Optional units:
  o °C
  o °F

➢ **Mass**
Optional units:
  o kg
  o lb

Figure 21: Units page reference.

3.3.4   Pages

In **Pages** sub-menu, a list of different primary pages can be viewed. The pilot can choose from list which pages will show or be hidden during device operation. Sub-menu includes following list of pages:

➢ Thermal assistant ➢ Gps info	➢ Flarm	➢ Turn-point

Figure 22: Pages sub-page reference figure.

3.3.5   Voice

In the **Voice** setup sub-menu the pilot can adjust volume and mixer setting for voice warnings. Sub-menu also includes setting for additional voice alerts, which can be left disabled or enabled for use during a flight. The "**Voice**" sub-menu includes following settings:

> **Volume**
Range: 0% to 100%

> **Voice test**
To test audio level.

> **Flarm traffic**
Options:
  o   Enable
  o   Disable

> **Flarm warnings**
Options:
  o   Enable
  o   Disable

> **Flarm obstacle**
Options:
  o   Enable
  o   Disable

> **Flarm h. distance**
Options:
  o   Enable
  o   Disable

> **Flarm v. distance**
Options:
  o   Enable
  o   Disable

Figure 23: Voice page reference.

3.3.6   Glider

In **Glider** sub-menu all settings connected to properties of glider can be adjusted:

- ➢ **Select glider** – entering setting will display a list of preinstalled types of the glider. Simply select the type of glider and confirm the selection.

  By confirming the type **User polar**, properties of glider type will be defined with variables in sub-menu.
- ➢ **Polar A** – variable to set polar A parameter of glider.
- ➢ **Polar B** – variable to set polar B parameter of glider.
- ➢ **Polar C** – variable to set polar C parameter of glider.
- ➢ **Empty mass** – variable to set empty mass of glider.
- ➢ **Reference mass** – variable to set reference mass of glider.
- ➢ **Max mass** – variable to set maximal mass of the glider.
- ➢ **Wing area** – variable to set wing area of glider.

Figure 24: Sub-menu Glider.

NOTE

Please see the documentation of your glider for all variables in "Glider" sub-menu.

3.3.7   Data port

Working configuration of the external data port is set in sub-page **Data port.** The pilot can set the following parameter:

➢ **Data port 2 –** parameter to set communication speed between the FenixS data port 2 and the externally connected device. The following data speeds can be chosen:
   o **BR4800**
   o **BR9600**
   o **BR19200**
   o **BR38400**
   o **BR57600**
   o **BR115200**

Figure 25: Data port sub-page reference.

3.3.8 Localization

Information and local settings can be set in the **Localization** sub-menu, containing preferred language and time zone.

- ➢ **Language –** can be chosen between English and German.
- ➢ **Time zone –** for local time.

Figure 26: Localization subpage reference.

3.3.9 Info

Unique device identifiers can be seen in sub-menu **Info**. Displayed list shows following identifiers:

- ➢ **Serial nr. –** serial number of FenixS unit.
- ➢ **Firmware –** current version of running firmware.
- ➢ **Hardware –** version of hardware used inside FenixS unit.

Figure 27: Info sub-menu reference.

3.3.10 Password

Special function passwords can be used:

> - **46486 –** will set FenixS to factory default state (all settings are cleared and default are used)
> - **99999 –** will clear logbook.

Figure 28: Password page reference.

4 Additional FenixS advance version pages

The following pages in the next sub-paragraphs are only valid for **advance** version of the FenixS.

4.1 Thermal assistant page

While thermaling, all thermal information can be vied on **Thermal assistant page**. Designed to provide best user interface displaying all essential thermal information to the pilot. The displayed **Thermal assistant page** will show following information on main screen:

➢ **GAIN –** will display accumulated/lost altitude from the very start of circling.
➢ **ALT –** will display current altitude of the glider.

➢ **Wind indicator –** will display wind speed and direction.

Figure 29: Thermal assistant page.

Thermal assistant page contains following layout. On the middle of the screen, graphical and numerical wind indicators can be seen inside thermal assistant.

Main purpose of displaying thermal assistant circuit, is to show the pilot a map of the thermal strength in the last full circuit. This will present approximated location of the currently best-known thermal strength.

Thermal assistant page will start indicating strength of thermals with the size of the dots. The larger the displayed dots, the stronger is the thermal.

Colors of the dots, will display following type of the thermal:

➢ **Red circuit** – will indicated positive thermal.
➢ **Blue circuit** – will indicated negative thermal.

Graphically displayed T.MAX value of the thermal can be seen on **Thermal assistant page** as large white dot.

Figure 30: Positive thermal with T.MAX circle.   Figure 31: Negative thermal reference figure.

Displayed green glider represents current positions of the pilot in the thermal. Left hand circling will display glider on the right side and right-hand circling will display glider on the left side.

Off-center, the integrated airspeed can be seen as well as altitude.

To enter the Thermal assistant submenu, the pilot must short press bottom rotary knob. Thermal assistant submenu holds the following functions, which can be enabled or disabled:

➢ **Auto switch –** enabled will automatically switch to thermal assistant page when circling is detected.
➢ **MacCready colors** – will represent climb stronger than 1.2*MC with red dots. Between 1.2*MC and 0.8*MC the color of the dots will be yellow and less than 0.8*MC will display blue dots.
➢ **Max beep / offset** – will make the device beep when the glider is approaching the point of the T.MAX value. With offset set, Fenix will generate a beep by a set number of seconds before T.MAX position is reached.

4.2   Flarm radar page

With the externally connected Flarm device into a data port of the FenixS, nearby objects can be viewed on the **Flarm radar page**. Displayed graphical radar and additional numeric information on main screen, will give the pilot quickly needed information about the surrounding gliders.

Figure 33: Flarm radar page reference figure.

Figure 32: Nearby selected glider for the information's view.

The pilot position is represented as green displayed glider in the middle of the screen. Colored arrows will represent nearby gliders. Blue arrows show objects which are higher, brown the ones which are lower and white the ones which are the same altitude (+- 20m). Selected object is colored in yellow color (Figure 32). Short press on bottom rotary knob will allow pilot to select different object from radar. Switch will also refresh selected glider information's on side screens.

Screen will show the following information's from currently selected glider:

  ➢ **F.ID –** will display the ID (3 letter code) of the selected glider.
  ➢ **F.ALT –** will display relative altitude of selected object.
  ➢ **F.VAR –** will display vario information of the selected object.
  ➢ **F.DIST –** will display the relative distance from us.

To change range of displayed radar, long press on rotary knob must be made to enter the Flarm sub-menu. Once in the Flarm sub-menu, the following function will displayed:

➢ **Zoom –** selecting will enable the pilot to change displayed range of the radar. Pilot must turn rotary knob CW to zoom in or CCW to zoom out. With selected range, the pilot must short press on the rotary knob to confirm this action.

➢ **Details –** selecting will display all information of the currently selected glider. If a glider with the unknown details is selected, the pilot can manually insert parameters in the FenixS unit. Parameters will then be saved.

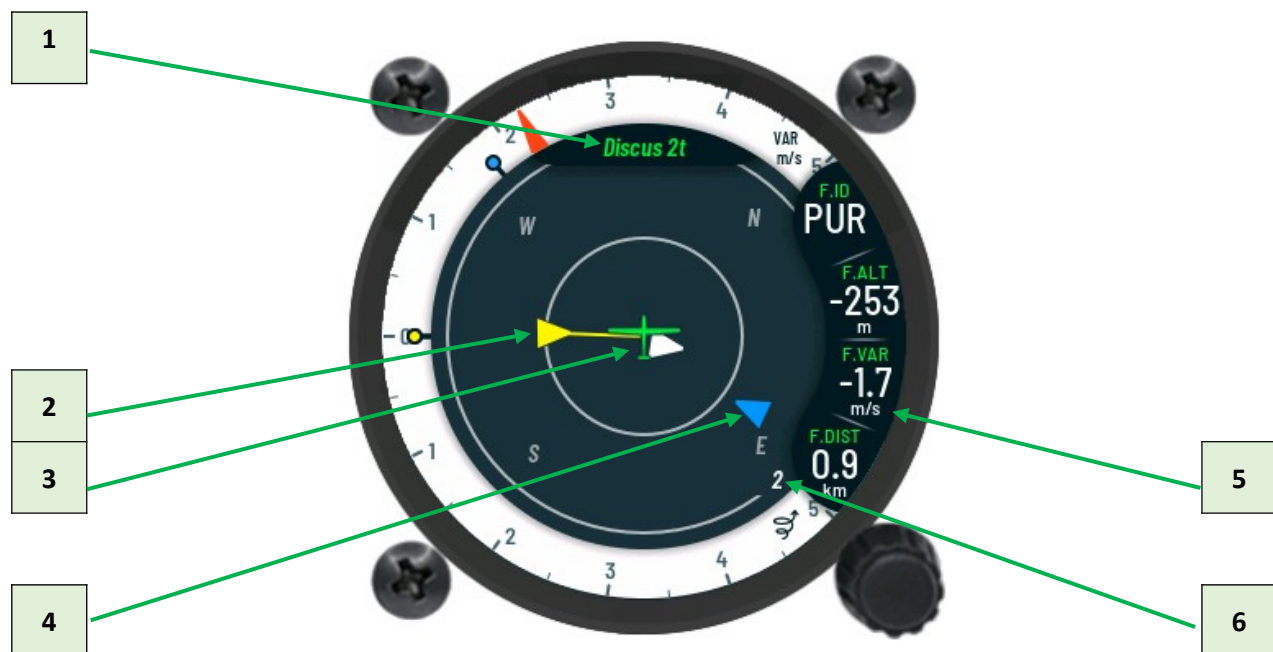➢ **Exit –** will return back to Flarm radar page.

Figure 34: Reference view of Flarm radar page.

Description:

1. Displayed type of the selected glider.
2. Currently selected glider marked by yellow arrow.
3. Objects on near same height are colored white.
4. A higher flying glider displayed with blue arrow.
5. Additional information of the currently selected glider.
6. Currently displayed range of the flarm radar **(can be selected from 1 to 9).**

4.3 Take-off info page

The **Take-off** page display the flight data from the last known take-off point. Yellow dot and line will represent the direction to where the last know take-off point was detected.

To change range of displayed distance, short press on rotary knob must be made. Current zoom indicator will be colored red. To change to required zoom, pilot must turn rotary knob CW to zoom in or CCW to zoom out. With selected range, the pilot must short press on the rotary knob to confirm this action.

Figure 35: Reference view of the Take-off page.

Description:

1. Displayed name of the info page.
2. Last take-off position.
3. Pilot position.
4. FG information to the takeoff position.
5. Navbox data.
6. Current zoom of the displayed distance **(can be selected from 1 to 30).**

Additional navbox data can be seen on the right side of the display. Data will give the pilot an easier representation of the current flight bearing, flight direction, and flight efficiency.

➢ **ETP –** displays required efficiently to reach the point.
➢ **TRK –** displays current direction of the flight.
➢ **BRG –** displays bearing direction to the take-off point.
➢ **DIST –** displays distance to the take-off point.

4.4   GPS info page

Once on **GPS info** page, following information can be seen:

➢ **Fix Quality / Satellite number –** displaying receiving signal quality and number of
satellites that are being received.
➢ **Latitude –** displays GPS latitude.
➢ **Longitude –** displays GPS longitude.
➢ **Time –** UTC time.
➢ **Date –** current UTC date.

Figure 36: GPS Info page.

4.5   Logbook page

In the ground stationary mode, the **Logbook** page will show its name on the screen. During this mode, the pilot can access list of flights with a short press on the rotary knob.

Figure 38: Logbook page view.

Figure 37: List of saved flights.

With the displayed list of last 50 flights, the pilot can scroll through the list by rotating the bottom rotary knob. On a list, date of takeoff, time of take-off / landing and flight time can be seen.

4.6 Flight statistic info page

Once the flight starts the **Logbook** page will be change to the **Flight statistic** page with the following available data to view:

➢ **Takeoff –** displays time of take-off.
➢ **Duration –** displays duration of the flight.

Figure 39: Flight statistic info page.

4.7   Warnings

For the warning references please see pictures below.

An **Obstacle** warning will be triggered if the pilot is to close to an obstacle.

Red rhombus will indicate, if for the nearby obstacle is higher or lower.

Figure 40: Obstacle warning view.

Traffic warning will indicate if aircraft is nearby. The red direction symbol will indicate the detected direction of the aircraft.

Red rhombus will indicate if the nearby aircraft is located below or above from our current height.

Figure 41: Low battery warning view.

5   Rear of unit

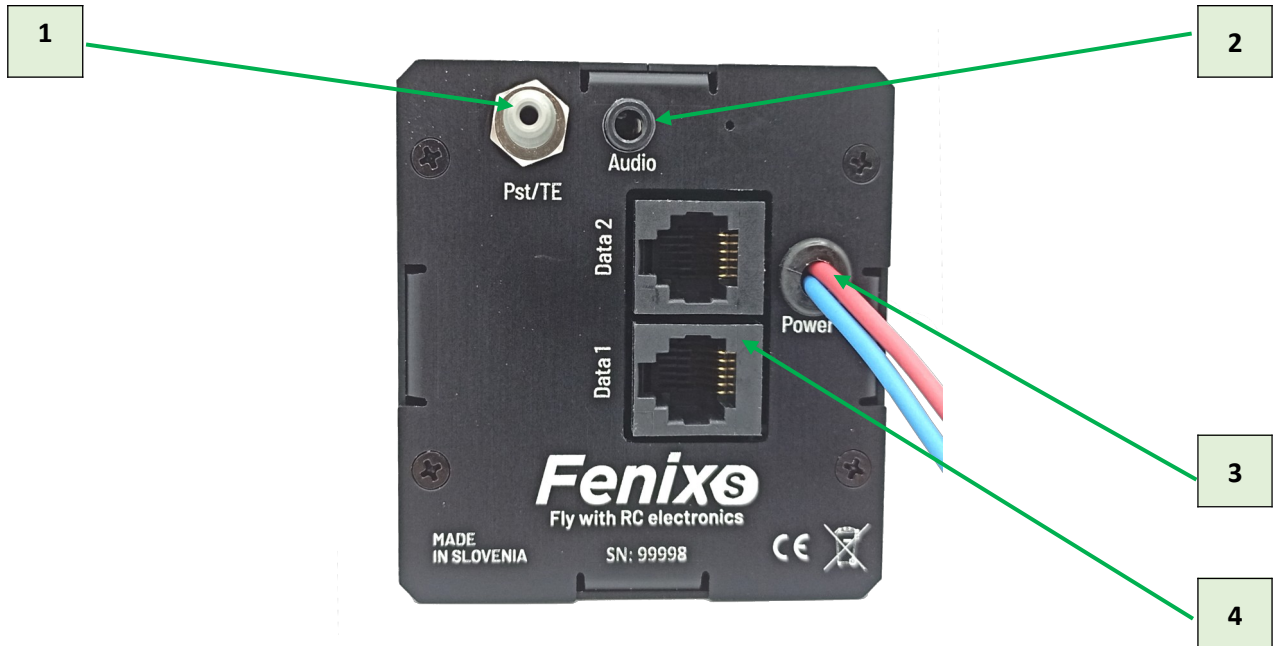The FenixS contains the following external peripheral connections.

Figure 42: Reference rear view of the FenixS.

Description:

1. **1.** Pst/TE pressure connections.
2. **2.** Audio 3.5mm Mono output for speaker.
3. **3.** Power **(9 – 32 Vdc)** connector to connect external power supply of glider system.
4. **4.** Data 1 and Data 2 which is used to connect devices with RS232 communication protocol.
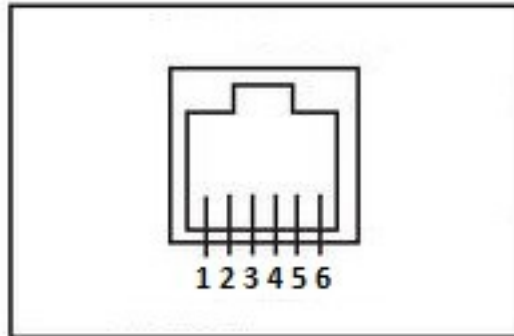
5.1   Data port pinout

Figure 43: Data connectors pinout.

Pin number	Pin description
1	Power output (same voltage as on power cable 9-32V)
2	Not used
3	Not used
4	RS232 data input (FenixS receives data)
5	RS232 data output (FenixS transmits data)
6	GND

6   Bluetooth connectivity

FenixS Advance and FenixS Basic need an externally Bluetooth module connected to the Data 1 port to enable wireless connection.

6.1   Pairing

To pair your device with FenixS please initiate search of BT device on your PNA/PDA.

FenixSXXXXX, where XXXXX represents serial number of the unit, will be visible on detected list, when in range and turned on.

Pair code will be requested to start communication with PDA/PNA and FenixS. Just confirm the pair code being offered and devices will be successfully paired. After successful connection, Bluetooth icon is visible on main vario page.

6.2   Supported data transfers

Data transfer type	Supported	Note
PFLAx (Flarm data)	yes	Only via BT module
GPRMC	yes	Only via BT module
GPRMB	yes	Only via BT module
GPGGA	yes	Only via BT module

7   Physical properties

This section is used to describe mechanical and electrical properties.
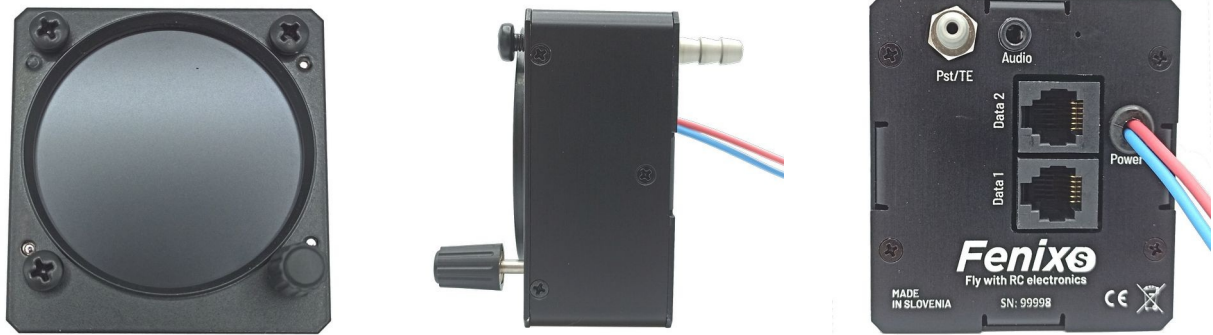
Dimensions	65mm x 62mm x 30mm
Weight	120g

7.1   Electrical properties

POWER USAGES

Input voltage	9V (Vdc) to 32V (Vdc)
Input current	80mA @ 13V (Vdc)

AUDIO (POWER DELIVERY)

Output power	1W (RMS) @ 8Ω

DATA PORTS (POWER DELIVERY)

Output voltage	Same as Input voltage of power connector
Output current (MAX)	-500 mA @ 9V (Vdc) to 32 (Vdc) per port

8   Installation of the unit

8.1   Mechanical installation

FenixS unit fits in standard 57mm hole in instrumental panel so no extra cutout is required. To install the unit in instrumental panel, unscrew three mounting screws (black) with a screwdriver and knob of rotary switch.

To remove the knob do not use force. Remove the press-in cover first to get to the screw. After unscrewing the screw pull off the knob. Then unscrew mounting nut for rotary switches

Place the unit in the instrumental panel and first screw in the two black screws and then mounting nuts for rotary switches. After that put back the knob on the rotary switch. Don't forget to screw the knob in place and put the press-in cover back on.

8.2   Pneumatic connections

FenixS has only one pressure intake port on the back of the unit. It's function is described by the label next to a port.

Pst/TE – Static pressure

Connect it to TE probe for compensating vario indication or to static port for non compensated vario indication.

9   Flight Recorder

The flight recorder doesn't need any special care as it works nearly automatically without pilot assistance.

9.1   Start and stop of flight recording

The unit will start recording immediately after start conditions are met. Start conditions are based on ground speed and altitude change, so even if the GPS status is bad during takeoff, the unit will start recording. It is recommended to switch the unit on a few minutes before takeoff. After landing the unit will close the flight after approximately 20 seconds at standstill, so it is recommended to keep the unit under power until flight is finished. To determine if the flight recorder has closed the flight, check **Logbook->Statistic page**. If the Logbook appears, the recording has finished, if the statistic page appears, the flight mode is still active.

10 Flying with FenixS

To get the best out of the unit, it is import ant that some preparation is done prior to the flight. Pre-flight preparation will ensure that the flight will be both successful and enjoyable.

10.1 Before take-off

- Switch the unit ON at least 3 minutes before take-off (this will ensure sufficient GPS reception if external GPS module is connected).

10.1.1 Set Elevation

The pilot should set elevation of airport if he wish to fly QNH mode of set elevation to 0 to fly QFE.

10.1.2 Set QNH

The pilot should input actual QNH value of the entered elevation. This will allow pilot to adjust daily pressure during the day to have correct altitude information during the flight.

10.2 During flight

The unit hardware and firmware concept are so far optimized that the pilot doesn't spend too much time to operate the unit during flight. A very significant indication that shows that the unit has changed to flying mode is **Logbook** replacement with **Statistics page**.

10.2.1 Set QNH

Change of QNH in main page quick setup menu will adjust altitude reading to actual QNH setting.

10.2.2 Wind calculation

Unit is able to measure wind under circling method. Wind calculation results are shown on wind indicator which is part of many pages.

Circling: Calculation is based on ground speed change due to wind influence in circling. The method is active exclusively during climbing process. The process start automatically after circling is detected. The method is based on fact that the ground speed is affected by the wind. GS is maximal by tailwind and minimal by head wind. This phenomenon is used by GS difference calculation method.

10.2.3 Influence of wind in final glide

The actual wind data (speed and direction) influences the final glide calculation.

10.3 After landing

It is recommended to keep the instrument on for a few minutes after landing so unit will detect landing state. At this point unit can be switched OFF.