S8x & S10x

Digital speed-to-fly variometer, final glide calculator and navigation system with simple moving map.

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1 Important Notices

The LXNAV S8x/S10x system is designed for VFR use only as an aid to prudent navigation. All information is presented for reference only. Terrain, airports and airspace data are provided only as an aid to situation awareness.

Information in this document is subject to change without notice. LXNAV reserves the right to change or improve their products and to make changes in the content of this material without obligation to notify any person or organization of such changes or improvements.

A Yellow triangle is shown for parts of the manual which should be read carefully and are important for operating the LXNAV S8x/S10x system.

Notes with a red triangle describe procedures that are critical and may result in loss of data or any other critical situation.

A bulb icon is shown when a useful hint is provided to the reader.

A cloud icon is shown when this functionality is supported only on S10x-systems.

1.1 Limited Warranty

This LXNAV S8x/S10x product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, LXNAV will, at its sole discretion, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labour, the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alterations or repairs.

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To obtain warranty service, contact your local LXNAV dealer or contact LXNAV directly.
2 Packing Lists

- LXNAV S8x or S10x main unit
- Main power cable for S8x/S10x + CAN terminator
- Speaker
- GPS cable (S7-GPS-IGC included, other types optional, this cable is included only with the S8x device)
- PDA cable (optional)
- 2x6 mm screw
- Bluetooth antenna 📡
- GPS antenna 📡
- Barogram calibration chart 📡

Second Seat:
- Main S8xD unit
- Y cable splitter (optional, only with compass or remote stick)
- Main 3m CAN cable
2.1 S80 (80mm) Variometer Unit
2.2 S8 (57mm) Variometer Unit

Audio jack
Main power
NOT IN USE
P Static
P Total
GPS/Flarm port
PDA port
TE

NOT IN USE
2.3 S10 (57mm) Variometer Unit

- GPS Antenna
- Audio jack
- GPS/Flarm port
- Main power
- PDA port
- Bluetooth antenna
- NOT IN USE
- TE
- P Total
- P Static
2.4 S100 (80mm) Variometer Unit
2.5 S10D and S8D Repeater Unit

S10D has also a PDA port, while S8D doesn't have it.
2.6 S100D and 80D Repeater Unit

S100D has also a PDA port, while S80D doesn't have it.
3 Basics

3.1 LXNAV S8x/S10x at a Glance

The LXNAV S8x/S10x is a standalone digital variometer, final glide calculator and navigation system with a simple moving map. The LXNAV S8x/S10x has both GPS/Flarm and PDA/PNA input/output. The unit has standard dimensions that will fit into a glider panel with an opening of 80 mm diameter (3.15”) or 57 mm diameter. It is also able to supply a PDA/PNA with power (5VDC/1A). The unit has an integrated high precision digital pressure sensor and inertial system. The sensors are sampled more than 100 times per second. Real Time Data is displayed via a vario needle, an airspace map and up to 4 variable number fields displayed on a QVGA 320x240 pixel, 3.5-inch (S80/S100) or 2.5-inch (S8/S10), high brightness (1200 nits) colour display. To adjust values and settings the LXNAV S8x/S10x has two rotary push button knobs and three additional push buttons.

The LXNAV S8x/S10x can be expanded with one or more repeaters (LXNAV S8x/S10x) via the CAN bus. This allows both pilots in a two-seat glider to have independent control of all functions of each unit in the front or the rear seat.

The S10x unit includes a built-in IGC-approved flight recorder, a Bluetooth module and its own backup battery which provides from 3 to 4.5 hours of independent operation.
3.2 LXNAV S8x/S10x Features

- An extremely bright 3.5” (S80/S100) or 2.5” (S8/S10) QVGA colour display readable in all sunlight conditions with the ability to adjust the backlight.
- Two rotary switches (knobs) with push button function and three push buttons are used for input.
- Pre-loaded polar database for nearly all gliders.
- GPS/Flarm and PDA/PNA input/output.
- Flarm Indication if a Flarm is connected to the GPS/Flarm port.
- Programmable “needles” for selectable data such as netto vertical speed, relative (super netto) and vertical speed (vario).
- 320x240 pixels colour screen for additional information such as average, thermal vario, time, speed etc...
- Many custom audio settings.
- 100Hz sampling rate for very fast response.
- Speed to fly indication.
- TE compensation can be selected to be either pneumatic TE probe or electronic TE.
- Audio equalizer, for custom vario sound performance.
- Audio thermal assistant.
- Built-in high level, IGC-approved flight recorder.
- Built-in Bluetooth module.
- Backup battery.
- Engine noise level sensor (ENL).
- Built-in GPS module.

3.2.1 Interfaces

- GPS/Flarm port input/output on RS232 level (RJ12 connector, none-Standard IGC) (12V/2A)
- PDA port input/output on RS232 or TTL level for PDA/PNA devices with 5V power supply (8 pin RJ 45, 5V / 1A).
- Audio port (Standard 3mm phone jack).
- 1Mbit CAN bus for extension to S8xD repeater or Remote stick (CAN remote).

3.2.2 Options

By using a CAN bus system, a second seat device can be connected. The unit installed in the rear seat of the glider is independently powered and receives all the necessary data from the main unit. The communication between both units is exclusively via the CAN bus system (Remote stick, Compass module, Second seat device).

3.2.3 S8/S80 Club

S8 Club and S80 Club are special price performance editions of basic S8 and S80 units. Following features are optional on this device: Task mode (see chapter 5.6), Digital inputs (see chapter 5.7.11.1), Pilot profiles (see chapter 5.7.12) and Airspaces (see chapter 5.7.6.2). Every option can be upgraded separately at any time. For purchasing additional options please contact LXNAV.

<table>
<thead>
<tr>
<th>Device:</th>
<th>S8</th>
<th>S8 Club</th>
<th>S80</th>
<th>S80 Club</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASK mode</td>
<td>Yes</td>
<td>Optional</td>
<td>Yes</td>
<td>Optional</td>
</tr>
<tr>
<td>Airspace</td>
<td>Yes</td>
<td>Optional</td>
<td>Yes</td>
<td>Optional</td>
</tr>
<tr>
<td>Digital inputs</td>
<td>Yes</td>
<td>Optional</td>
<td>Yes</td>
<td>Optional</td>
</tr>
<tr>
<td>Pilot profiles</td>
<td>yes</td>
<td>Optional</td>
<td>Yes</td>
<td>Optional</td>
</tr>
</tbody>
</table>
3.2.4 Technical Data

Power input 10-16 V DC.

3.2.4.1 Power Consumption

<table>
<thead>
<tr>
<th>Device</th>
<th>Min. Brightness (mA)</th>
<th>Max. Brightness (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S8</td>
<td>140</td>
<td>190</td>
</tr>
<tr>
<td>S8D / S10D</td>
<td>90</td>
<td>140</td>
</tr>
<tr>
<td>S80</td>
<td>140</td>
<td>190</td>
</tr>
<tr>
<td>S80D / S100D</td>
<td>90</td>
<td>140</td>
</tr>
<tr>
<td>S10</td>
<td>170</td>
<td>200</td>
</tr>
<tr>
<td>S100</td>
<td>190</td>
<td>250</td>
</tr>
</tbody>
</table>

3.2.4.2 Size and Weight

<table>
<thead>
<tr>
<th>Device</th>
<th>Size</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S8</td>
<td>57 mm cut-out 61x61x95mm</td>
<td>339</td>
</tr>
<tr>
<td>S8D / S10D</td>
<td>57 mm cut-out 61x61x48</td>
<td>210</td>
</tr>
<tr>
<td>S80</td>
<td>80 mm (3.15&quot;) standard aircraft cut-out 81x81x132mm</td>
<td>460</td>
</tr>
<tr>
<td>S80D / S100D</td>
<td>80 mm (3.15&quot;) standard aircraft cut-out 81x81x45mm</td>
<td>290</td>
</tr>
<tr>
<td>S10</td>
<td>57 mm cut-out 61x61x70mm</td>
<td>348</td>
</tr>
<tr>
<td>S100</td>
<td>80 mm (3.15&quot;) standard aircraft cut-out 81x81x64mm</td>
<td>515</td>
</tr>
</tbody>
</table>
4 System Description

4.1 Push Button – Rotary Switches
The two Rotary switches also have a push button function. The LXNAV S8x/S10x detects short or long presses of the push button. A short press means just a click, a long press means pushing the button for more than one second.

4.1.1 Power Button
The system is powered up by pressing any of the push buttons or a press of either of the rotary knobs. A long press of the upper rotary knob will turn the S8x/S10x off. Use this instead of the avionics master switch.

4.2 Rotary Switches
The upper rotary knob is designed for direct volume control. A short-press on the upper rotary knob will produce an option to select between options and adjust volumes for the Vario, Speech and Flarm beep.

A long-press on the upper rotary knob will shut down the system cleanly.

The lower rotary knob is used to adjust settings within the current mode or within menus. With the lower rotary push button, it is possible to toggle between the MC and the Ballast and Bugs settings. In all other menus this knob is used for setting values and editing texts.
4.3 Buttons (Three)

The three buttons between the two rotary knobs have fixed functions. The top button is ESC (CANCEL), the middle is to switch between modes and the lower button is the ENTER (OK) button. The upper and lower buttons are also to rotate between subpages in the WPT and TSK modes.

4.4 Switching on the Unit

Pressing any of the buttons or rotary knobs will turn on the S8x/S10x. The first LXNAV welcome screen will appear with the system information (Device name, Version, Serial number...)

⚠️ The S8xD rear seat unit cannot be powered up before the S8x/S10x has been powered up.

When the boot procedure is completed the setup elevation dialogue will be displayed.

The user must set either the Elevation or the QNH with the lower rotary button. After pressing the lower rotary button, the user can switch between the Elevation and QNH dialogues. As soon as the settings are set the middle button must be pressed to proceed.

💡 The upper push button also has the power OFF function.
4.5 User Input

The LXNAV S8x/S10x user interface consists of dialogues which have various input controls. They are designed to make the input of names, parameters, etc., as easy as possible. Input controls can be summarized as:

- Text editor
- Spin controls (Selection control)
- Checkboxes
- Slider control

To move the function from one control to another, rotate the lower rotary knob as follows:

- Clockwise rotation will select the next control.
- Counter clockwise rotation will select the previous control. The lower PUSH button enters the selected feature.
- Faster rotation of the rotary knob will increase the rate at which the value changes i.e. bigger steps in value.

4.5.1 Text Edit Control

The Text Editor is used to input an alphanumeric string; the picture below shows typical options when editing text/numbers. Use the lower rotary knob to change the value at the current cursor position.

Once the required value is selected, press the lower push button to move to the next character selection. To move back to the previous character, press the upper push button. When you have finished editing, press the Enter key – the lower rotary button. A short press of the middle push button exits from the edited field (“control”).
4.5.2 “Spin” Control

“Spin” controls are designed for numeric parameters. Rotate the knob to increase/decrease the selected value. To increase a value in larger steps, spin the lower rotary knob faster.

4.5.3 Selection Control

Selection boxes, also known as combo boxes, are used to select a value from a list of predefined values. Use the lower rotary knob to scroll through the list.

4.5.4 Checkbox and Checkbox List

A checkbox enables or disables a parameter. Press the lower rotary knob to toggle the value. If an option is enabled a check mark will be displayed, otherwise an empty rectangle will be displayed.
4.5.5 Slider Selector
Some values, such as volume and brightness, are displayed as a slider icon.

![Slider Selector Image]

With a push of the lower rotary button you can activate the slide control and then by rotating the knob you can select the preferred value and confirm it via the push button.

4.6 Switching Off
You will lose your settings if you power down the S8x via the panel master-power switch. S10x will shut down properly, when switching down master – power switch.

To archive your settings, shut down with a long-press of the volume (top) knob.

⚠️ All settings are saved during the power off procedure. We strongly recommend switching off the unit by using a long-press of the (top) knob.

⚠️ If the system is powered off via the master switch, changed data will not be saved. Flight parameters at take-off such as target altitude and position will remain in the stored memory so that your final glide calculations are not affected.
5 Operating Modes

The LXNAV S8x/S10x has five operating modes. The middle (Menu) push button toggles through the 5 display modes in a circular way. The diagram below shows the mode structure of the LXNAV S8x. With the upper and lower buttons, it is also possible to shift between subpages.

- **Info Mode**: Contains the GPS data, Altitude, Battery and Sunset time, OAT.
- **Flarm Mode**: Showing Flarm targets in range (if a Flarm device is connected to the GPS port).
- **Thermal Mode**: Showing a thermal assistant during circling (S8x only if a GPS source is present).
- **Waypoint Mode**: Simple navigation screen to a waypoint plus subpages (S8x only if a GPS source is present).
- **Task Mode**: Task screen showing the task and airspace plus subpages (S8x only if a GPS source is present).
- **Setup Mode**: For all aspects of the setup of the S8x/S10x.
5.1 Quick Access Menus

For each mode a quick access menu is available, which varies from mode to mode. Items available in quick access menus are:

- MC/BAL
- Reset G
- Layout
- Edit target (only Flarm page)
- Flarm traffic (only Flarm page)
- Select (Only in WPT mode)
- Select Near (Only in WPT mode)
- Send WPT
- WPT elevation (Only in WPT mode)
- Event
- Night
- Edit Task (only in task mode)
- Start (only in task mode)
- Next (only in task mode, visible only after pressing start)
- Restart (only in task mode, visible only after pressing start)
- Options (only in TSK mode)
- Load (only in TSK mode)
- Save (only in TSK mode)
- Wind (only in WPT and TSK mode)

5.1.1 MC/BAL

To change the McCready value, press the bottom rotary knob and press on MC/BAL. A short press of the lower rotary knob moves from McCready to the Ballast box and pressing the lower rotary knob again will open the Bugs box. If no action is performed within 3 seconds, the box will close, or you can also press CLOSE anytime (lower push button).

5.1.2 Reset G

"Reset G" is a method of re-setting the "G" meter if configured as the yellow bar on the vario scale.
5.1.3 Layout
Sidebar, number and position of navboxes can be defined in this menu. Position (vertical or horizontal) is set by rotating the lower rotary knob, after confirming you can set number of navboxes and also define which navbox you would like to have. Layout setting is different for numerical or graphical page.

5.1.3.1 Layout in numerical page
In numerical page number of navboxes and sidebar can be set. Every navbox can be defined separately.

5.1.3.1.1 Sidebar
User can select between the different sidebars options that can be displayed on the page. (Classic Speed to Fly-push/pull bar, Flaps tape, Speed tape and combined Speed & Flap tape). Speed to Fly bar is dynamic.
Layout in graphical page

In graphical page navboxes can be vertical or horizontal (2 types). Sidebar cannot be set in this page. Every navbox can be defined separately.

5.1.3.1.2 Editing navboxes

You can select the required data for the highlighted navbox. A short press of the lower rotary knob selects the desired setting and returns you to the navbox selection.

Pressing the EXIT (middle) button at any time saves the setting and moves to the main mode.

List of available navboxes:

<table>
<thead>
<tr>
<th>Type</th>
<th>Navbox title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude (m)</td>
<td>Alt</td>
<td>Altitude in Meters</td>
</tr>
<tr>
<td>Altitude (ft)</td>
<td>Alt</td>
<td>Altitude in Feet</td>
</tr>
<tr>
<td>Flight level</td>
<td>FL</td>
<td>Flight level</td>
</tr>
<tr>
<td>Height above take off</td>
<td>Hgt</td>
<td>Height is the vertical distance above take off position</td>
</tr>
<tr>
<td>Total Alt.</td>
<td>Alt T</td>
<td>Altitude which considers also the kinetic energy</td>
</tr>
<tr>
<td>Altitude (IGC)</td>
<td>IGC</td>
<td>IGC altitude (not available in S8/S80 units)</td>
</tr>
<tr>
<td>Raw IGC altitude</td>
<td>rIGC</td>
<td>Altitude IGC Raw (not available in S8/S80 units) - rIGC</td>
</tr>
<tr>
<td>Gained altitude</td>
<td>AltG</td>
<td></td>
</tr>
<tr>
<td>Current vario</td>
<td>Var</td>
<td></td>
</tr>
<tr>
<td>Netto</td>
<td>Net</td>
<td>Vertical speed of air mass</td>
</tr>
<tr>
<td>Average vario</td>
<td>Var A</td>
<td>Average vario (average vario time can be set)</td>
</tr>
<tr>
<td>Netto average</td>
<td>Net A</td>
<td>Average vertical movement of air mass</td>
</tr>
<tr>
<td>Parameter</td>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Thermal average</td>
<td>Thrm</td>
<td>Average vario from beginning of circling (Green T)</td>
</tr>
<tr>
<td>True airspeed</td>
<td>TAS</td>
<td>True airspeed</td>
</tr>
<tr>
<td>Indicated airspeed</td>
<td>IAS</td>
<td>Indicated airspeed</td>
</tr>
<tr>
<td>Last 60’ speed</td>
<td>Sp60’</td>
<td>Average speed for last hour</td>
</tr>
<tr>
<td>Ground speed</td>
<td>GS</td>
<td>Speed over ground, taken from GPS</td>
</tr>
<tr>
<td>Speed to fly</td>
<td>STF</td>
<td>Calculated speed to fly from MC setting (McSpeed)</td>
</tr>
<tr>
<td>Ground Track</td>
<td>Trk</td>
<td>Track over ground taken from GPS</td>
</tr>
<tr>
<td>Magnetic Heading</td>
<td>Hdg</td>
<td>Heading (from compass)</td>
</tr>
<tr>
<td>Local Time</td>
<td>Time</td>
<td>Local time Offset can be adjusted under Setup-Units</td>
</tr>
<tr>
<td>Flight time</td>
<td>Fit T</td>
<td>Airborne time</td>
</tr>
<tr>
<td>G-load</td>
<td>g</td>
<td>G load – current</td>
</tr>
<tr>
<td>G-load Min.flight</td>
<td>gmin</td>
<td>Minimum g-load during flight</td>
</tr>
<tr>
<td>G-load max.flight</td>
<td>gmax</td>
<td>Maximum g-load during flight</td>
</tr>
<tr>
<td>MacCready L/D</td>
<td>Emc</td>
<td>Calculated glide ratio at selected McCready value</td>
</tr>
<tr>
<td>MacCready</td>
<td>Mc</td>
<td>McCready setting</td>
</tr>
<tr>
<td>Active freq.</td>
<td>COM</td>
<td>Active frequency</td>
</tr>
<tr>
<td>Standby freq.</td>
<td>STBY</td>
<td>Standby frequency</td>
</tr>
<tr>
<td>XPDR Transp.</td>
<td>XPDR</td>
<td>Transponder frequency</td>
</tr>
<tr>
<td>Outside temp.</td>
<td>OAT</td>
<td>OAT – Outside air temperature</td>
</tr>
<tr>
<td>Battery voltage</td>
<td>Batter y</td>
<td>Battery voltage</td>
</tr>
<tr>
<td>Wind</td>
<td>Wind</td>
<td>Wind direction and speed</td>
</tr>
<tr>
<td>Wind comp.</td>
<td>cWnd</td>
<td>Wind component</td>
</tr>
<tr>
<td>Flap Current</td>
<td>Current flap position</td>
<td></td>
</tr>
<tr>
<td>Flap Requested</td>
<td>Requested flap position</td>
<td></td>
</tr>
<tr>
<td>Distance</td>
<td>Dis</td>
<td>Distance to the target in meters</td>
</tr>
<tr>
<td>Distance (nm)</td>
<td>Dis</td>
<td>Distance to the target in nautical miles</td>
</tr>
<tr>
<td>Bearing to target</td>
<td>Brg</td>
<td>Bearing to the target if GPS is present</td>
</tr>
<tr>
<td>Steering course</td>
<td>To</td>
<td>Steering course to the target</td>
</tr>
<tr>
<td>Radial</td>
<td>RdI</td>
<td>On radial of selected target</td>
</tr>
<tr>
<td>Arrival altitude</td>
<td>Arr</td>
<td>Arrival altitude on target</td>
</tr>
<tr>
<td>Arrival for Mc0</td>
<td>Arr0</td>
<td>Arrival altitude on target with Mc=0</td>
</tr>
<tr>
<td>Required alt.</td>
<td>ReqA</td>
<td>Required altitude to real target elevation (without safety altitude taken in account)</td>
</tr>
<tr>
<td>Required L/D</td>
<td>reqE</td>
<td>Required glide ratio to the target</td>
</tr>
<tr>
<td>Task remain distance</td>
<td>tDis</td>
<td>Task remaining distance</td>
</tr>
<tr>
<td>Task req. L/D</td>
<td>tskE</td>
<td>Required glide ratio to task finish</td>
</tr>
<tr>
<td>Task arrival Mc0</td>
<td>tAr0</td>
<td>Arrival altitude on task with Mc=0</td>
</tr>
<tr>
<td>Leg cross distance</td>
<td>xTrk</td>
<td>Off distance from the task leg</td>
</tr>
</tbody>
</table>

⚠️ Safety altitude has no influence to required alt calculation!
5.1.4 Select / Select Near (Only in WPT mode)

To **Select** a waypoint, rotate the lower rotary knob to highlight the select option and then press once. This will open the Waypoint list.

The waypoint can be selected from the alphabetical list of waypoints (see uploading files section 5.7.5.1). Rotating the lower rotary knob moves you through the waypoint list in alphabetical order, clockwise increases the value, counter-clockwise decreases the value. To select the first letter of the desired waypoint, rotate the lower rotary knob, then press the lower push button to move to the next selection of the letter. Rotate the lower rotary knob until the second letter of the required waypoint is highlighted and then repeat the process until the required waypoint is the only selection available. Press enter (lower rotary button) to select the waypoint. The screen will then change back to the navigation mode and show a line to the waypoint, waypoint name and the relative bearing.

**Select Near** is to select a WPT from the list which is sorted by distance from the current location. You can sort waypoints by Name/Distance and Bearing by pushing upper or lower push button. Selection of a WPT is the same as described above.

5.1.5 WPT elevation

WPT elevation can be modified in this menu (can be raised or lowered). Changing elevation will have consequences on most of the navboxes, so please pay attention before changing its parameters!

5.1.6 Edit Target

The user can edit the Flarm target details.

5.1.7 Flarm Traffic

This mode shows all available Flarm traffic around the glider with their FLARM ID codes; the user can also edit all Flarm object data.

5.1.8 Event

Event is used to log an event. The recording rate will be increased to 1 second for one minute. A message “*Event marked*” will be displayed on the screen. 📺
5.1.9 **Night**
Selecting night will cause the unit's brightness to be decreased to its minimum. Pressing again on "night" will reset the brightness to the value defined under **settings**.

5.1.10 **Edit Task (Only in Task Mode)**
Selecting edit task via a short press of the lower rotary knob will enter the task editing screen. The first time you edit a task it will be blank. A short press of the lower rotary knob will open another menu with the option to:
- Edit,
- Insert,
- Delete,
- Zone.

Selecting Insert will allow you to enter a waypoint from the list as a start point. Rotating the lower rotary knob moves you through the waypoint list in alphabetical order, clockwise increases the value, counter-clockwise decreases the value. To select the first letter of the desired waypoint, rotate the lower rotary knob, then press the lower push button to move to the selection of the next letter. Rotate the lower rotary knob until the second letter of the required Waypoint is highlighted and then repeat the process until the required waypoint is the only selection available. Press enter (lower rotary button) to select the Waypoint. Once the start point is selected, rotate the lower rotary knob clockwise and click to select the second turn point. Edit the second turn point as above. Repeat for all the points in the task. When you have completed editing the task, press the (middle) button to save the task and return to the Task navigation mode.

You can also change the Observation zone from the defaults for each Waypoint. To do this select EDIT TASK->select waypoint in the task and then press the lower rotary knob. The quick access menu allows you to insert, edit, delete or change the zone for the Waypoint. If you select **Zone** you can modify the zone for that specific waypoint only.

![Waypoint screenshot](image)

Navigate to near point is possible

5.1.11 **Start Task (only in Task Mode)**
Selecting start followed by a short press of the lower rotary knob will start a task.

5.1.12 **Restart Task (only in Task Mode)**
Selecting restart followed by a short press of the lower rotary knob will restart the task.
5.1.13 Next Waypoint (only in Task Mode)
Selecting next followed by a short press of the lower rotary knob will advance the task to the next waypoint in the task.

5.1.14 Send WPT
With pressing that option, selected waypoint will be sent to SxxxD unit.

5.1.15 Load/Save
In the Load menu you can create files to load on the instrument or you can upload them to the instrument via the SD card. To save currently active task select Save in the quick access menu. Task will be saved in the internal memory.

5.1.16 Export
Every task can be exported to the external sd -> to .cup file on the sd card.

5.1.17 Wind
Here you can switch between automatic wind calculation by instrument or setting wind parameters yourself. When Wind calculation is disabled you can manually set wind speed and direction.

5.2 Info Mode
The Info Mode gives you a snapshot of the GPS position, date and time along with Flight level, altitude, Battery and Flarm status. The Flight Level equivalent is also available in meters or feet as is the Altitude navbox.
Description:

- Logger status is displayed as Stop or Run. You can also set logger to be always turned on (see chapter 5.7.2.4)
- The GPS status is displayed as OK, BAD, NODATA together with the number of satellites.
- Latitude and longitude
- Local time and date
- Sunrise and sunset time.
- Flight level also in meters
- Altitude in meters and ft
- Battery status
- IGCAlt – IGC altitude
- Flarm status (TX – transmits data / and a number of received Flarms)
- OAT – outside air temperature
- GFL – G-force levels. Minimum and maximum recorded G-force level

5.2.1 Quick Access Menu

A short press of the (lower) rotary button activates the Quick Access menu. Refer to Section 0 for details of the Quick Access menu.

5.3 Flarm Mode

If the S8x/S10x is connected to a Flarm source via the GPS port (in the S10x called the Flarm port) then the Flarm Mode will display a map of the relative positions of Flarm targets that are within range. By rotating the lower rotary knob, you can change the range of the display from 0.5 km to 150 km. Switching between Flarm targets is possible via the up/down button. Data from a selected Flarm object can be seen in 4 corners, such as: Flarm Id, Distance, Vario and Relative altitude (Above / Below). There is also an indication of how many Flarm objects are present displayed as: TX/number.

This mode can be disabled via Setup->graphics->modes->Flarm mode.

Distance, relative altitude and vario indications are related to the selected target.
5.3.1 Quick Access Menu
A short press of the lower rotary button activates the Quick Access menu. Refer to Section 0 for details of the Quick Access menu.

5.3.1.1 Edit Target
The user can edit the following Flarm objects data:
- Flarm ID
- Competition sign
- Pilot
- Aircraft type
- Registration
- Airfield
- Communication frequency (object’s communication frequency)

These settings can be accessed by pressing the lower rotary button, selecting EDIT target and then modifying the data of interest.

5.3.1.2 Flarm Traffic
All Flarm objects in range are displayed in this mode. The following details are shown:
- Flarm target ID
- Relative distance
- Vertical speed (vario data from the object)
- Relative altitude

If you press on the selected Flarm target you can enter the edit target menu where you can insert a target’s data.

5.3.2 Flarm Warnings
Regardless of which Mode you are in, if a Flarm target triggers an urgent (third warning level) or important (second warning level) warning then the screen will change to the Flarm warning mode automatically.

Extract from the Flarm manual:
Warnings are given in order of the time remaining before a potential collision, not the geometrical distance. The first warning level for another aircraft or an obstacle is delivered at less than 19 - 25 seconds before the possible collision; the second warning level is delivered at less than 14 - 18 seconds before; the third level at less than 6 - 8 seconds before.

The central number and chevrons indicate if the Flarm target is below or above and by how many meters/feet. The number in the bottom right indicates the range in meters/feet. The numbers are related only to the closest or the most dangerous target.
5.4 Thermal Assistant Mode

The Thermal Assistant mode displays a graphical representation of your location within the thermal. If you are thermaling to the left, there will be an aircraft symbol on the right of the ring of bubbles and the bubbles will appear to rotate clockwise (towards the symbol of the glider). If you are in a right-hand thermal there will be an aircraft symbol on the left and the ring of bubbles will appear to rotate anticlockwise (towards the symbol of the glider). Large red bubbles indicate the strongest lift within the thermal and small blue dots indicate the weakest lift or sink within the thermal. Yellow bubbles indicate lift equal to your MacCready setting, average thermal or average climb rate depending on your preferred setting (refer to Section 5.7.8.6.1). The point of strongest lift is indicated by a white large bubble.

You can use the thermal assistant, to visually determine which part of the thermal has the strongest lift and adjust your turn accordingly to manoeuvre the glider in the direction of the strongest lift and away from the weakest lift or sink.

The thermaling assistant can be set to automatically change to the Thermal assistant mode or it can be manually selected. See Section 5.7.8.6.2 for settings.

The two navboxes within the Thermal Assistant Mode can be configured using the quick access menu.

This page can be configured via: Setup->graphics->modes->thermal mode.

Look out of the cockpit!

Looking into thermal assistant might be life threatening for you and other pilots in the thermal.

5.4.1 Quick Access Menu

A short press of the (lower) rotary button activates the Quick Access menu. Refer to Section 0 for details of the Quick Access menu.
5.5 Waypoint Mode

The Waypoint mode is a quick access screen to provide simple navigation to a Waypoint or Airport. By rotating the bottom rotary knob, you can vary the range of the display from 0.5 km to 100 km.

The first page shows a line to a selected waypoint, the name of the selected waypoint at the top of the screen and the relative bearing and chevrons indicating the direction to turn towards the selected waypoint.

5.5.1 Quick Access Menu

A short press of the (lower) rotary button activates the Quick Access menu. Refer to Section 0 for details of the Quick Access menu.
5.5.2 Second Page Within Waypoint Mode (Numerical Data)

The Waypoint mode has a second page which contains numerical data. Defaults are 4 navboxes: Average Vario, Netto, Altitude and True Airspeed. In addition, the central line shows the status of the Flarm, GPS, Cruise/Climb and battery status. This second page can be selected by pressing the lower push button once. You can return to the Waypoint navigation mode by pressing the upper push button (top button of the three).

The Vario Needle can display: the Vario, Netto, Relative or Speed to fly value (Setup->Hardware->Indicator). The scale can be chosen in the range of +/-5 +/-10 or +/-20. Cursor style can be thin, medium or thick style. It can be linear or non-linear (setup->graphics->indicator). Within the software the range can be set to m/s, kts, km/h, mph or fpm (in Setup, Units, Vertical speed).

- **Sidebar** can be configured to display Speed to fly bar, Speed tape or flap tape.
  - The **Speed to fly bar symbol** indicates which speed you must fly relative to the current MacCready setting, sink rate and speed. One arrow means 10 units of speed faster or slower. Up red arrows mean fly slower and down blue arrows mean fly faster.
  - **Speed Tape** represents the Indicated Air Speed (IAS) in speed tape form. Depending on the speed setting’s (see Polar & Glider - Speeds). The speed tape will change colour from green, yellow to red depending on the settings and the IAS
  - **Flap Tape** can display recommended flap position. If a Flap sensor is present on the CAN bus, the flap tape will also display the actual flap position.
  - **Speed and Flap tape** is a mix of both, speed and flap tape.
- The **Red diamond** symbol can show Netto, Average Netto, Average vertical speed or G-force.
- The **Blue arrow** symbol shows the current MacCready value.
The **Green T** symbol represents last thermal average value.

The **Yellow Bar** can show Max and Min values of vario over defined time (average vario) or G meter (over whole flight).

The **Flarm Status** symbol indicates the presence of a Flarm unit (grey), if the Flarm receives any data from other Flarm units, the symbol becomes red.

The **GPS** symbol is green when GPS status id is OK, and red when GPS status is bad. If GPS data is not detected, the symbol will disappear.

The numerical navboxes can be changed using the Quick Access menu with a short press of the lower rotary knob followed by selecting navbox from the menu and a further short press of the lower rotary knob. With the first navbox highlighted with a yellow border you can scroll through the four navboxes using the lower rotary knob. Select the navbox you wish to change with a short press of the lower rotary knob. This will open a list of available navboxes.

Select the required navbox and then save this with a short press of the lower rotary knob. Repeat the process for any other navbox that needs to be changed.

### 5.5.3 Third Page at Waypoint Mode (AHRS page)

The Waypoint mode has a third page which displays the AHRS (if this feature has been enabled – refer to Section 8.5.5).

The Pitch offset can be adjusted via the lower rotary knob.

For competitions the artificial horizon can be disabled via the Setup>Graphics>Modes menu. See Section (5.7.5) for more details. When the artificial horizon page is active a BFION event is written to recorded flight for verification purposes.
5.5.4 Quick Access Menu
A short press of the (lower) rotary button activates the Quick Access menu. Refer to Section 0 for details of the Quick Access menu.

5.6 Task Mode
The task mode can display a navigation page including airspace and a task. By rotating the lower rotary knob, you can change the range of the display from 0.2 km to 100 km.

Task mode is not enabled on S8/S80 Club version. To purchase this option please refer to chapter 3.2.3

5.6.1 Second Page Within Task Mode (Numerical Data)
The Task mode has a second page which contains numerical data. Defaults are Average Vario, Netto, Altitude and True Airspeed. The central line also displays the status of the Flarm, GPS, Cruise/Climb and battery. This second page can be selected by pressing the lower push button once. You can return to the task navigation page by pressing the upper push button.

The navigation boxes in this second task page can be changed using the Quick Access menu and selecting navbox. You can make changes to the navboxes as described in Section 0.
5.6.2 Third Page Within Task Mode (AHRS Page)
The Task mode has a third page which displays the AHRS (if this feature has been enabled, refer to Section 8.5.5 for details).

The pitch offset can be adjusted with the lower rotary knob.

For competitions the artificial horizon can be disabled in the Setup>Graphics>Modes menu. See Section 5.7.5 for more details. When the artificial horizon page is active a BFION event is written to the recorded flight for verification purposes.

5.6.3 Quick Access Menu
A short press of the lower rotary knob activates the Quick Access menu. Refer to Section 0 for details about the Quick Access menu. The following menus are available:

- MC/BAL
- Start
- Edit task
- Load
- Save
- Delete
- Wind
- Layout
- Reset G
- Event
- Night

Changing the Start, Edit task, MC/BAL is the same as Page 1 of the Task mode.
5.6.3.1 Editing navboxes
Selecting the navboxes option and then pressing the bottom rotary knob will allow you to select one of the three boxes by rotating the lower rotary knob followed by a short press. You can then select the required data for the highlighted navbox. A short press of the lower rotary knob selects the desired setting and returns you to the navbox selection.

Pressing the EXIT (middle) button at any time saves the setting and moves to the main page.

5.7 Setup Mode
The setup mode allows you to change the configuration and base settings for the S8x/S10x vario.

Following items are listed in the setup menu:
- QNH &RES
- Flight recorder
- Vario parameters
- Display
- Files
- Logbook
- Graphics
- Sounds
- Observation Zones
- Warnings
- Units
- Hardware
- Polar & Glider
- Profile
You can scroll up and down the list of settings by rotating the lower rotary knob and selecting a setting to change with a short press of the lower rotary knob.

All menus have the EXIT button which will exit to the previous menu. You can also exit from the menu if you press the middle push button.

Some of the options have sub menus and these are selected in the same way.

**5.7.1 QNH & RES**

Turn the lower rotary knob to select the required entry field. Press the lower rotary knob to select it and start editing the value. A further short press will enter the value.

5.7.1.1 **QNH**

This feature may be used to offset the altitude datum as the result of pressure changes during the flight. Since changing the QNH influences the indicated altitude, care should be taken when changing the value as an incorrect setting could upset the final glide calculation.

5.7.1.2 **Safety Altitude**

This setting is the altitude reserve or safety altitude and is the height that the instrument adds to the final glide altitude required so the glider arrives over the final glide destination at the selected safety altitude. Once the safety altitude has been specified, the pilot must keep the final glide indicator on 0 to arrive at the safety altitude (setup one of the navboxes in the primary or secondary pages of waypoint or task modes to be Arrival Altitude).
5.7.2 Flight Recorder

The S10x vario system has a built-in IGC-approved flight recorder. In this menu the user can set flight recorder parameters and pilot’s data.

⚠️ S8x version 6 or higher also has a flight recorder which does not have a digital signature and therefore is not approved for badge flights according IGC standards.

5.7.2.1 Recording Interval
Set the recording interval from 1 – 20 seconds.

5.7.2.2 Auto Finish
If this functionality is enabled, the flight recorder will automatically finish the flight under the following conditions:
- GPS status OK
- Groundspeed lower than 20 km/h
- True airspeed lower than 40km/h
- Absolute vario lower than 1m/s for 300 seconds

5.7.2.3 Finish Before OFF
If this setting is enabled the flight will be finished if the user powers down the unit.

5.7.2.4 Logger Always ON
This setting will enable logging of flight immediately after power on and will log the fight until the unit is powered down. The only condition to start logging is the presence of a valid time (GPS status BAD or OK). Logging will not start if GPS status is Very Bad (no valid time present).

5.7.2.5 Pilot
Insert the pilot’s name which will be stored in the declaration.

5.7.2.6 Co-pilot
If the system is used in a two-seater the name of the co-pilot may also be entered.

5.7.2.7 Competition number
Insert the competition number of the glider which is also stored in the flight file.

5.7.2.8 Registration number
Insert the registration number of the glider which is also stored in the flight file.
5.7.3 Vario Parameters

5.7.3.1 Vario Needle Filter
Sets a time constant of the Vario needle. The value can be adjusted between 0.1 and 5 s with step 1.0 s or 0.1 s. Default value is 2.0 s.

A lower number (0.1 s compared to 5.0 s) means very sensitive (fast vario).

5.7.3.2 Vario Sound Filter
Sets a time constant of the Vario sound. The value can be adjusted between 0.1 and 5 s with step 1.0 s or 0.1 s. Default value is 2.0 s.

5.7.3.3 Netto Filter
Sets a time constant of the Vario Netto needle. The value can be adjusted between 0.1 and 5 s with step 1.0 s or 0.1 s. Default value is 4.0 s.

5.7.3.4 Relative Filter
Sets a time constant of the Vario Relative needle. The value can be adjusted between 0.1 and 5 s with step 1.0 s or 0.1 s. Default value is 4.0 s.

5.7.3.5 SC Filter
Sets a time constant of the Speed-To-Fly needle. The value can be adjusted between 0.1 and 5 s with step 1.0 s or 0.1 s. Default value is 4.0 s.
5.7.3.6  **Smart Filter**
Using the **Smart vario filter** the vertical speed can be further filtered. Smart vario filter defines maximum speed of the vario needle. “1” is the highest damping, “8” the lowest. Off means no additional filtering.

<table>
<thead>
<tr>
<th>RAW VARIO</th>
<th>FILTERED VARIO</th>
<th>VARIO INDICATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILTER 0.5 to 5</td>
<td>Smart Vario FILTER 1 to 8 or OFF</td>
<td></td>
</tr>
</tbody>
</table>

5.7.3.7  **Needle Range**
Sets the full-scale range of the vario (2.5 m/s, 5 m/s or 10 m/s). Default value is 5 m/s (10 kts).

5.7.3.8  **Auto SC (speed command)**
Defines the conditions when the instrument (needle) will switch automatically between vario and speed to fly mode. It is just a needle mode.

- **OFF**: Switching exclusively by means of an external switch connected to the S8x/S10x. With new versions of Remote sticks there is no longer a “physical” switch connection between the Remote stick and the Vario unit – it is a switch on the Remote stick which is connected through the RS485 bus.
- **GPS**: When the GPS detects that the glider is circling an automatic change over to vario will happen after approximately 10 seconds. Detection of straight flight will cause a changeover to speed command.
- **IAS**: When the IAS exceeds a pre-set value. The IAS at which switching occurs can be selected in 5 km/h steps from 100 up to 160 km/h (or the equivalent in knots or mph).
- **G-meter** – for switching between cruise and climb mode based on the G measured by the inertial system. When glider starts circling the S8x/S10x will automatically switch from cruise to climb mode.

The external switch wired to the LXNAV S8x/S10x has absolute priority and will override all other switching methods. VP (Vario priority) input can also override a hard-wired SC switch.

⚠️ To configure navboxes in SC mode on the ground you must first turn Auto SC off, configure your navboxes and then set Auto SC back to your preferred setting.
5.7.3.9  TE Compensation
The LXNAV S8x/S10x offers two methods of vario Total Energy Compensation:

- Pneumatic TE Pitot tube
- Electronic TE compensation

It is important to note that the method of TE compensation is defined when the instrument is installed by virtue of the pneumatic connections made to the TE and static ports. Changing the compensation type in the setup mode below WILL NOT change the method of compensation – the pneumatic plumbing must be changed first.

If the TE pitot tube has been connected, TE compensation should be set to 0%. No further adjustment of the TE compensation is possible. Quality of the TE tube is the one and only factor.

For electronic TE compensation, connect the TE port to static. Set the Vario Param TE compensation initially to 100% and then adjust this with flight testing as described below.

5.7.3.9.1  TE-Fine Tuning
The electronic TE compensation can be fine-tuned during flight using the following procedure:

It is essential that this is only done in smooth air; it is not possible to tune the TE accurately in turbulent air.

- Set TE compensation to 100%.
- Accelerate up to approximately 160 km/h (75 kts) and keep the speed stable for a few seconds.
- Gently reduce the speed to 80 km/h (45 kts).
- Observe the vario indicator during the manoeuvre. At 160 km/h the vario will indicate about -2 m/s (-4 kts). During the speed reduction the vario should move towards zero and should never exceed zero.
- If the vario shows a climb the compensation is too low; increase the TE% and vice versa.
- Try another “zoom” to assess the change and make further adjustments if necessary.

Electronic TE compensation is only effective when the Pitot tube and static sources are collocated and the pneumatic lines to the instrument are approximately the same length. The best sensor to use is the combined pitot/static Prandtl tube. If problems are experienced with the electronic TE compensation the most likely cause is the glider’s static source.

The static source can be checked by plumbing the pneumatic tubes for electronic compensation and then setting the TE: to 0%. In still air accelerate to approximately 160 km/h (75kts) and slowly reduce the speed to 80km/h (45kts). Observe the vario indicator. If the static source is good the vario should immediately start to move to show a climb. If the needle initially shows increased sink and then moves to a climb, the static source of the glider is unsuitable and there is no way to provide successful TE compensation electronically. The use of a dedicated and accurate fin-mounted pitot/static source such as a Prandtl tube might help.
5.7.3.10  **Vario Average Time**  
Defines the integration period for the average netto vario in seconds. The default is 20 seconds.

5.7.3.11  **Integrator Reset**  
If this item is enabled the average vario (integrator) will be reset to 0 when switching from SC to Vario mode.

5.7.3.12  **Temperature Offset**  
The LXNAV S8x/S10x is supplied with an external outside air temperature (OAT) sensor. With the offset setting it will correct static errors of temperature measurement.

5.7.3.13  **Airspeed Offset**  
The user has the possibility to make an airspeed offset if the measurement is not correct.

5.7.3.14  **Inertial Assisted Vario**  
With the LXNAV S8x/S10x, it is possible to adjust the influence of g-force on the vario. This influence is very small and can be set to OFF or between 0 and 4.

0 means no inertial assistance.  
4 is the highest influence of the inertial platform to vario.

**5.7.4 Display**

5.7.4.1  **Automatic Brightness**  
If the Automatic Brightness is checked, then the brightness will be automatically adjusted between the minimum and maximum parameters set. If the Automatic Brightness is unchecked, then the brightness is controlled by the brightness setting.

5.7.4.2  **Minimum Brightness**  
Use this slider to adjust the minimum brightness for the Automatic Brightness option.

5.7.4.3  **Maximum Brightness**  
Use this slider to adjust the maximum brightness for the Automatic Brightness option.
5.7.4.4 **Get Brighter In**
The user can specify in which time period the brightness can reach the required brightness.

5.7.4.5 **Get Darker In**
The user can specify in which time period the brightness can reach the required brightness.

5.7.4.6 **Brightness**
With the Automatic Brightness unchecked you can set the brightness manually with this slider.

5.7.4.7 **Night Mode Darkness**
Set the percentage of the brightness to be used after a press on the NIGHT mode button.
5.7.5 Files
The Files menu allows you to upload or select Waypoint, Airspace and Flarm Net files.

5.7.5.1 Profiles
Saved profiles on the SD card can be loaded into device in this menu.

5.7.5.2 Waypoints and Tasks
Selecting the Waypoints and Tasks menu opens a list of .cup files available in the internal memory. After pressing add new lists files present on the SD card. Selected files are automatically loaded into internal memory.

Selected files can be also removed from the internal memory after using remove function.

The file size of a waypoint file is limited to 1MB. The supported format is CUP as generated with the SeeYou program. Some versions of CUP may not be compatible if they are not created according to CUP standard, which is a proprietary format from the Naviter company.

The number of CUP files that can be viewed/selected is 20.
5.7.5.3  **Airspace File**

Selecting the Airspace menu opens a list of .cub and .lxa (files from ASAPT database) files available in the internal memory. After pressing **add new** lists files present on the SD card. Selected files are automatically loaded into internal memory.

Selecting a file loads this file for use.

The LXNAV ASAPT database file format is also supported and can be loaded into the system.
5.7.5.4 **Logbook**

The logbook page lists all the flights sorted by date.

If GPS data is present the logbook will show the date and time of departure. Manual navigation (without GPS) will show duration and will be marked with "—" marks.

💡 The user can download a flight by a short press on the lower rotary button.

5.7.5.5 **Flarmnet file**

Selecting the Flarmnet option opens a list of .fln files available on the SD card or in the internal memory. Selecting a file loads it.

⚠️ Please note that only one Flarmnet file can be loaded at any one time.
5.7.6 Logbook

The logbook page lists all the flights sorted by date.

If GPS data is present the logbook will show the date and time of departure. Manual navigation (without GPS) will show duration and will be marked with "—" marks.

💡 The user can download a flight by a short press on the lower rotary button.
5.7.8 Graphics
The Graphics option has a sub menu for Map, Airspace, Waypoints, Glider and Track, Tasks, Flarm, Theme setup and Modes.

5.7.8.1 Indicator Setup
Vario indicator graphics and preferences can be adjusted in this menu.

5.7.8.1.1 Vario Needle
Can be set to Vario, SC, Netto, Relative or G-meter.

5.7.8.1.2 SC needle
Can be set to Vario, SC, Netto Relative or G-meter.

5.7.8.1.3 Yellow Bar
Can be set to G-meter, Min/Max vario or no bar.

5.7.8.1.4 Red Diamond
Can be set to No diamond, Average, Netto, Average Netto, G-meter or SC.

5.7.8.1.5 MacCready
The blue triangle can be enabled or disabled.
5.7.8.1.6 Thermal
The green T can be enabled or disabled.

5.7.8.1.7 Red cursor style
It is possible to pick between thin / middle or thick cursor style.

5.7.8.1.8 Needle range type
Non-linear needle means that positive climb numbers are not in the linear scale, but they are wider at weak climb and narrower at very strong climb rate. If you wish to have always the same space between numbers, then use the linear scale.

5.7.8.1.9 STF or Speed to Fly:
The push - pull bar can be enabled or disabled.

5.7.8.1.10 Colour style – Gauge: Inner
With this dialogue you can change the background colour for the vario gauge (Outer ring) and the background of the information circle within the gauge. You have the choice of the following:

<table>
<thead>
<tr>
<th>Gauge</th>
<th>Inner</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Black</td>
</tr>
<tr>
<td>White</td>
<td>White</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>Black</td>
<td>Black</td>
</tr>
</tbody>
</table>

5.7.8.1.11 User msg. Transp.
With this dialogue you can change the transparency of the user messages when they are displayed overlaid on each screen from 0 to 100%. Default is 50%.

5.7.8.1.12 Navbox transparency
With this dialogue you can change the transparency of the navboxes which are overlaid on each screen from 0 to 100%. Default is 44%.

5.7.8.2 Map
Map orientation can be Track Up or North Up.

Graphic settings of Navboxes from the graphical page can be adjusted in this menu. It is possible to adjust following settings:

- Navboxes background transparency
- Navboxes background colour
- Navboxes border transparency
- Navboxes border colour
- Navboxes title colour
- Navboxes value colour
Airspaces are not enabled on S8/S80 Club version. To purchase this option please refer to chapter 3.2.3

In this dialogue you can define the airspace map presentation. Check the Show airspace item to enable airspace displays in navigational modes. If this item is unchecked no airspace will be displayed.

Use Show only airspace below to eliminate airspace which is going to be too high for the day. For example, if the forecasted cloud base is to be 1500 m, set this value to 1600 m and your screen will be much more readable.

In the airspace type list, you can specify how each airspace type is displayed. You should define each type of airspace zone separately. First choose an airspace type from the list. You can modify the Transparency of the selected type. The Zoom value defines to which zoom level this type is going to be visible. The Colour and Width items specify how the selected airspace zone will be drawn.

All settings listed above can be changed for airspace classes A, B, C, D, E, F and for the following types of airspace:

- Control zone
- Restricted zone
- Prohibited zone
- Danger zone
- Glider sector
- Airway sector
- Transponder Mandatory Zone (TMZ)
- Military zone
- Other zone
5.7.8.4 **Waypoints**

In this dialogue you can define whether waypoints are displayed or not, how many characters are displayed and the size and colour of the label.

### 5.7.8.4.1 Show waypoint

Check the dialogue box to enable waypoint labels for the Waypoint and Task Modes.

### 5.7.8.4.2 Max Visible

It defines how long waypoints and detailed symbols are shown. If the maximum number of waypoints on the current screen is more than the defined value only small blue dots will be shown for waypoints and no labels will be drawn.

### 5.7.8.4.3 Label zoom

The Label zoom value defines up to which scale of zoom waypoints are visible. 20km means the whole width of the screen represents 20 km.

### 5.7.8.4.4 Label Length

You can choose to display all the characters in the waypoint name or a maximum of 8, 7, 6, 5, 4, 3, 2, 1 or none.

### 5.7.8.4.5 Label Font size

You can choose between 24, 18 or 16 points.

### 5.7.8.4.6 Label Font Colour

You can choose a font colour from the pallet of 12 colours.
5.7.8.5 Glider and Track

In this dialogue you can choose to show a line to the target and your track line together with the colour from the pallet of 15 colours.

5.7.8.5.1 Show line to target

Check the dialogue box to display a line to the target.

5.7.8.5.2 Line to target

You can choose the colour of the target line from the pallet of 15 colours.

5.7.8.5.3 Show track line

Check the dialogue box to enable a line to the target.

5.7.8.5.4 Track line

You can choose the colour of the track line from the pallet of 15 colours.

5.7.8.6 Thermal Assistant
5.7.8.6.1  Colour Circles By

There are three options for the thermal assistant, Auto Span, MacCready and Average Vario.

The colours in the thermal assistant indicate below average (blue), average (yellow), above average (red) and the strongest point of thermal (white).

- If **Auto Span** is selected then the Thermal Assistant will use the average performance of the last circle to calculate below, average and above average climb and indicate accordingly i.e. red bubbles for strongest lift and blue dots for weakest lift or sink.
- If **MacCready** is selected then the Thermal Assistant will use the current MacCready setting to show rate of climb below, MacCready and above the MacCready setting.
- If **Average Vario** is selected then the Thermal Assistant will use the average vario for the flight to show the rate of climb below average vario, average vario and above average vario.

5.7.8.6.2  Switch to Thermal Assistant Mode

With setting **in circling** the S8x/S10x will change to the Thermal Assistant mode when the glider starts turning in a climb. It can change to the Thermal mode also if SC mode is switched to Vario mode, if setting **SC-VAR. switch** is selected. If the box is disabled, then the thermal assistant mode can be accessed manually.

The S8x will only detect turning if a GPS or Flarm device is attached. The S8x uses a combination of change of speed, angle of bank and direction change to indicate circling.

The S10x has an internal GPS module.

5.7.8.6.3  Use active navigation data

If this item is checked, all the data relating to navigation will be calculated to either Wpt or Task, depending on which page the thermal mode was switched from.

5.7.8.6.4  For Manual switching

If you manually switch to thermal mode, all navigation data will be related to the setting you have selected here (waypoint or task data).

5.7.8.6.5  Thermal Assistant Ping Method

If the Thermal assistant ping method is enabled the user will hear a PING during circling. When the PING is heard the pilot must expand the circle to centre the thermal. In the settings there are two methods available to trigger the PING: time before thermal maximum and angle before thermal maximum.

5.7.8.6.6  Time Before Ping

Using this method, user will hear PING (different audible signal) the selected number of seconds before maximum of thermal.
5.7.8.6.7 **Angle Before Ping**

Using this method, user will hear PING (different audible signal) the selected number of degrees before maximum of thermal.

5.7.8.7 **Task**

![Task](image)

With this dialogue you can change the colour of the task line and turn point zone and modify the zone transparency and Zone line width.

5.7.8.7.1 **Show only current zone**

It shows only current active zone on the task.

5.7.8.7.2 **Task colour**

You can choose the colour of the task line from the pallet of 15 colours.

5.7.8.7.3 **Zone colour**

You can choose the colour of the task line from the pallet of 15 colours.

5.7.8.7.4 **Zone transparency**

With this dialogue you can choose the level of the zone transparency from 0 to 100%.

5.7.8.7.5 **Zone width**

This dialogue defines the line width of the zone with a choice of 10-line widths.
In this menu you can choose to show Flarm traffic on the map, select target on map only, change glider colours and adjust the Flarm object timeout and graphical settings.

5.7.8.8.1 Traffic on Map
Check the dialogue box to display Flarm objects on the screen.

5.7.8.8.2 Select Target on Map Only
There will be only the selected target on the map.

5.7.8.8.3 Colours
Colours can be set for the following:
- Glider Above Colour
- Glider Below Colour
- Glider Near Colour
- Selected target Colour

5.7.8.8.4 Label Text
On the map it is possible to show additional, related text next to the Flarm object. This option can be set to None, Competition sign, Climb rate and Relative vertical.

5.7.8.8.5 Active Timeout
Adjusts the time a glider symbol remains on the map after it has last been seen by the Flarm.

5.7.8.8.6 Inactive Timeout
Adjusts the time for inactive gliders on the Flarm target list. Inactive gliders are gliders where the Flarm signal has been lost for a period longer than the Active timeout. The targets become inactive and remain only in the Flarm target list for this time.
5.7.8.8.7 Draw Line to Selected Target
Check this option to enable or disable a line drawn to a selected Flarm target.

5.7.8.8.8 Draw History
Select if a trail is to be drawn behind Flarm targets to show where the targets have been.

5.7.8.8.9 Plane Icon size
To adjust the pixel size of Flarm targets.

5.7.8.9 Modes
Task, Thermal and Flarm modes can be disabled via this menu. Also, the AHRS page can be disabled here.

For competitions the artificial horizon can be disabled in this menu. When the artificial horizon page is active a BFION event is written to the recorded flight for verification purposes.

5.7.9 Sounds
The sounds option has a sub menu for Equalizer, Vario and Flarm.

5.7.9.1 Equalizer Option
With the lower rotary knob, you can adjust the volume for each frequency. The settings are stored when you exit the screen (via the middle button).
5.7.9.2  Vario Sounds

In this menu the user can change all the parameters for vario sounds.

The volume for Vario, Flarm and Speech can also be adjusted directly via the upper rotary knob whilst in the Flarm, Waypoint and Task Modes.

5.7.9.2.1  Vario Volume

The user can set the default vario volume.

Sound shape

In this menu, you can choose between following shapes: Sinus, Triangular and Harmonic.

Vario audio mode:
- **Linear positive**: the sound is interrupted with silence every few milliseconds when the needle is positive; on negative side sound is linear (not interrupted).
- **Linear negative**: inverse function to Linear positive.
- **Linear**: the sound is linear and non-interrupted in full scale range.
- **Digital positive**: similar to Linear positive, except the way of beeping is sl
- **Digital negative**: inverse function to Digital positive.
- **Linear positive only**: the sound is present only at positive values, for negative values there is silence.
- **Digital positive only**: similar function to Linear positive only, except the sound is similar to the digital tone.
- **Digital**: similar function to Linear, except the sound is similar to the digital tone. The frequency is not changing linearly, but by steps. Sounds like playing a flute.

5.7.9.2.1.1  SC Audio mode

SC audio mode has five modes:
- **SC positive**: the sound is interrupted with silence every few milliseconds when the needle is positive; on negative side sound is linear (not interrupted).
- **SC negative**: inverse function to SC positive.
- **SC**: the sound is linear and non-interrupted in full scale range.
• **SC Mixed**: for positive relative values the sound represents relative; for negative relative values the sound represents SC (for that setting it is recommended to set SC needle to relative).

• **Relativ**: the variometer will produce the same sound as defined in Vario audio, except it will follow relativ speed values.

**Dead band**
Defines the width of the audio dead band in speed to fly mode. Default value is ±1 m/s.

5.7.9.2.1.2 Audio frequencies
- **Freq at 0%** defines the tone frequency at 0 m/s.
- **Freq at +100%** defines the tone frequency at full + deflection.
- **Freq at -100%** defines the tone frequency at full – deflection.

5.7.9.2.1.3 Equalization pre-sets
We have three options: default LXNAV speaker, flat setting or user defined.

💡 The volume for Vario, Flarm and Speech can also be adjusted directly via the upper rotary knob whilst in the Flarm, Waypoint and Task Modes.

5.7.9.3 Flarm Sounds

5.7.9.3.1 Flarm Volume
Adjust the default Flarm volume with the slider.

5.7.9.3.2 Flarm Low Alarm
For distant Flarm targets the S8x/S10x give a short or long message, just a beep or be turned off (19-25 seconds before possible collision).

5.7.9.3.3 Flarm Important Alarm
For close Flarm targets the S8x can give a short or long message, just a beep or be turned off (14-18 seconds before possible collision).
5.7.9.3.4 **Flarm Urgent Alarm:**
For very close Flarm targets the S8x/S10x give a short or long message, just a beep or be turned off (6-8 seconds before possible collision).

The volume for Vario, Flarm and Speech can also be adjusted directly via the upper rotary knob whilst in the Flarm, Waypoint and Task Modes.

For the alarm sound the user has the possibility to select between beep, short message and long message sounds.

Short message sounds: “Traffic two o’clock”
Long message sounds like: “Traffic two o’clock, two kilometres, two hundred meters above”.

5.7.10 **Obs. Zones**
The default Observation Zones can be configured in this section for all tasks.

The Start, Waypoint and Finish zone can be configured separately although the setup is very similar.

- **Direction**: Options include Start, Previous, Next, Symmetrical or Fixed angle.
- **Angle 12**: is greyed out unless fixed angle is specified in Direction.
- **Line Check Box**: typically used for Start and Finish. If line is checked then Angle 1, Angle 2 and Radius 2 are greyed out.
- **Angle 1**: Sets the angle of the Turn Point Zone.
- **Radius 1**: Sets the radius of the Turn Point Zone.
- **Angle 2**: Sets angle 2 for complex Turn Points and Assigned Area Tasks.
• **Radius 2**: Sets the radius for complex Turn Points and Assigned Area Tasks.
• **Auto Next**: Typically used in racing tasks, this will change the navigation of the S8x/S10x to the next turn point when a single fix is made within the Turn Point Zone.
• **To Near**: if this is checked, it will navigate to nearest point of the zone.

### 5.7.11 Warnings

There are Flarm, Altitude and Airspaces warnings.

#### 5.7.11.1 FLARM warnings

**5.7.11.1.1 Enable Flarm Warnings**
Warnings can be enabled or disabled in this section. The warning dismiss time can be set from 0 to 120 seconds.

**5.7.11.1.2 Display PCAS alarms**
To see non-directional traffic on the Flarm screen. Non-directional traffic will be drawn with a dotted circle at the received distance from the aircraft position. PCAS timeout is setup separately in next time spin control.

**5.7.11.1.3 Display urgent alarms**
Third level approximately **8 seconds** before predicted collision.

**5.7.11.1.4 Display important alarms**
Second level approximately **13 seconds** before predicted collision.

**5.7.11.1.5 Display low alarms**
First level approximately **18 seconds** before predicted collision.

**5.7.11.1.6 Dismiss while circling**
This dismisses Flarm alarms for Flarm targets in the same thermal. Flarm warnings for urgent alerts override this.
5.7.11.1.7 Dismiss time
If a Flarm warning is dismissed, there will be no Flarm warnings for the number of seconds set in that menu. Once certain Flarm alarm is set of you can dismiss it for that set amount of second by pressing lower knob.

5.7.11.2 Altitude warnings

5.7.11.2.1 Altitude alarm
It can be set in meters or feet. The S8x/S10x will display a warning before reaching the selected altitude.

5.7.11.2.2 Warn me before
Is related to Altitude alarm; it can be set from 10 to 500 seconds. The predicted time to reach alarm altitude is calculated from the average vario.

5.7.11.3 Airspace warnings

5.7.11.3.1 Minutes off
Once a warning appears, you can disable it for a specific time in minutes. This time can be set here.

5.7.11.3.2 Seconds before entry
You can set how many seconds before entering the airspace you would like to get the warning.

5.7.11.3.3 Minimum altitude difference
It defines minimum altitude difference to the zone.

5.7.11.3.4 Minimum distance
Minimum distance to the airspace before the warning appears can be set here.

5.7.11.3.5 Alert On
Alert can be defined for specific zones (Class A, B, C, D, E, F, Other, Control, Restricted, Prohibited, Danger, Airway, Glider sector, Transponder and Military).
The S8x/S10x will provide the following visual messages/warnings:

- Digital signature failed (it will appear immediately after initial setup)
- Freezing temperature (it is related to the OAT measurement)
- Task started
- Inside zone
- Next zone
- Outside zone
- Airbrakes not locked
- Check landing gear
- Low external battery
- Running on internal battery (if flight recorder is running) _airplane,
- Shutting down (if flight recorder is not running and there is no external power) _airplane,
- Freezing temperature (if the outside temperature is 1 degrees)
- Altitude warning
- Airspace warning
5.7.11.5 Voice Warnings

The S8x/S10x will trigger the following voice warnings:

1. Gear warnings
   CHECK GEAR: this warning is triggered 5 minutes after take-off if the landing gear is not wired to any of the inputs of the S8x/S10x.
   CHECK LANDING GEAR: during the flight, gear up*, airbrakes opened*.

2. Airbrakes warnings
   CHECK AIRBRAKES: if you are on the ground, speed 0, gear down*, airbrakes opened*. This warning is repeated every 30 seconds.
   WARNING AIRBRAKES, WARNING AIRBRAKES…: during the acceleration, gear down*, airbrakes opened*.
   CHECK AIRBRAKES: speed, airbrakes opened*.

3. Low battery (if the battery is low – see battery chemistry setting).
4. Stall speed (warning is related to the stall speed set in the menu).

*airbrakes or landing gear should be wired to digital inputs!

5.7.12 Units

Use this menu to specify units, UTC time offset and type of ballast input.

- **UTC Offset**: in half or whole hours plus or minus Zulu.
- **Units system**: Metric, English, US.
- **Distance**: Units available; statute miles, nautical miles, kilometres.
- **Altitude**: Units available feet, meters.
- **Temperature**: Units available; degrees centigrade or degrees Fahrenheit.
- **Pressure**: Units available; inches of mercury (inHg), mm of mercury (mmHg), mbar.
- **Speed**: Units available; fpm, m/s, mph, kts, km/h.
- **XC Speed**: Units available; fpm, m/s, mph, kts, km/h.
- **Vertical Speed**: Units available; fpm, m/s, mph, kts, km/h.
- **Wind**: Units available; fpm, m/s, mph, kts, km/h.
- **Weight**: lbs or kg
- **Load**: lb/ft² or kg/m²
- **Longitude/Latitude**: DD.ddddd, DDMM.mmmmm’, DDMM’SS.ss”, DD.dddd, DDMM.mmm’, DDMM’SS”
5.7.13 Hardware

The hardware setup has a sub menu for Digital inputs, Indicator, Communications, Battery, Remote Stick, Flaps, Bridge and Compass module.

5.7.13.1 Digital inputs

Digital inputs are not enabled on S8/S80 Club version. To purchase this option please refer to chapter 3.2.3

VP Input (Vario Priority)

When this input is activated by grounding the appropriate wire, the unit will change over to Vario immediately. This input wire is set open (not grounded) as a factory default on delivery. This switch has priority over all SC switching methods. This means it will override all other signals for SC and switch unit to vario mode. This input is not wired in standard wiring - it must be wired by the customer.

5.7.13.1.1 SC Switch

The LXNAV S8x/S10x has an input for an external speed command switch. Using the external switch, it is possible to manually switch between SC and Vario. Setting the SC switch to ON means that closing the switch will cause the instrument to enter SC mode. Setting the SC switch to OFF means that closing the switch will select Vario mode. There is a third option by setting SC INPUT to TASTER and connecting a push button to the input; each key press will toggle between SC and Vario (mandatory setting for LX Remote, which provides a push button for SC).
5.7.13.1.2  Digital Inputs 1,2,3,4

The LXNAV S8x/S10x has 4 external digital inputs which can be set to indicate the state of the landing gear, airbrakes and water open or closed. The wiring is described in Section 8.6.2.

5.7.13.1.3  Example of Warnings Triggered by the Input:

1. Gear warnings
   CHECK GEAR: this warning is triggered 5 minutes after take-off if the landing gear is not wired to any of the inputs on the S8x/S10x.
   CHECK LANDING GEAR: during the flight, gear up, airbrakes opened.

2. Airbrakes warnings
   CHECK AIRBRAKES: if you are on the ground, speed 0, gear down, airbrakes opened.
   WARNING AIRBRAKES, WARNING AIRBRAKES...: during the acceleration, gear down*,
   airbrakes opened.
   CHECK AIRBRAKES: speed, airbrakes opened.

Input pins are available on the rear DB15 connector, but they are not wired.

Input is active when it is shortened to ground.

5.7.13.2  Communication Setup

This is used to configure the two ports on the back of the S8x/S10x for connecting to a GPS/Flarm source and to a PDA. Each port can be configured separately.

5.7.13.2.1  Direct link: PDA-GPS link

If your PDA device does not support automatic switch to DIRECT LINK between GPS and PDA port, there is a manual DIRECT LINK menu. The user can select between PDA-GPS or BT-GPS.

When automatic baud rate is enabled, the LXNAV S8x/S10x will automatically search on all speeds to receive valid data on the GPS(FLARM) port. When the S8x/S10x receives a valid NMEA sentence it will lock on that baud rate and stop searching.
**PDA-GPS link** is normally automatic, but some PDA's software requires manual settings.

Connecting S8x/S10x to Flarm extension port can lead to data being sent over being insufficient. Please connect S8x/S10x to the main Flarm port.

### 5.7.13.2.2 BT-GPS Link
Allows a PNA device connected via Bluetooth to directly communication with a device which is connected to the GPS/Flarm port (Flarm/Nano).

### 5.7.13.2.3 PDA Baud rate
Set the baud rate of the PDA port.
The baud rate on the PDA port must be set to same as it is on the PDA device otherwise S8x/S10x and PDA will not hear each other.

⚠️ The baud rate on PDA must not be lower than the setting on GPS port.

### 5.7.13.2.4 GPS (S10x-Flarm port) Baud Rate
Set the baud rate of the GPS/Flarm port.

⚠️ To obtain best performance from the LXNAV S8x/S10x it is recommended that both baud rates are set as high as possible.

### 5.7.13.2.5 Bluetooth
ON/OFF for the internal Bluetooth module. If the BT module is turned off the power consumption will be lower, and the operating time of the internal battery will increase.

**NMEA output** on PDA port and on BT can be enabled or disabled. If you are not using a PDA port this setting should be disabled to obtain better performance.

⚠️ Before using Bluetooth, Bluetooth antenna must be connected to the unit.

The Bluetooth password is 1234 or 0000.
This Bluetooth is compatible with iOS and Android.

### 5.7.13.2.6 Beeps Controlled by PDA
If a PDA is connected to the S8x/10x, the PDA can send a beep command to the S8x. If this feature is enabled the S8x/10x will beep on request from the PDA.
5.7.13.2.7 External Target
If this item is checked unit will accept target information received by PDA, BT or GPS port. User will get information to the screen, that new target is received. User can accept or ignore the target.

5.7.13.3 Battery Setup
S10x units have 2 options listed:
- External battery
- Internal battery

5.7.13.3.1 External Battery chemistry
The user must select the battery from the battery list to obtain the proper voltage measurement.

Batteries used in gliders today are not just the old-style lead acid battery but also Lithium Ion (LiIon) and Lithium Iron Phosphate (LiFePo) are available. Each battery type has a different power delivery curve and it is now possible to configure the Low and High Battery warnings.

Select battery from list gives you a drop-down list with the suggested battery settings for Full Voltage, Low Battery Voltage and Empty Voltage as pre-sets. Selecting one of these will set the values in the following boxes.
Alternatively, you can manually change the Full Voltage, Low Battery Voltage and Empty Voltage if your battery type is not listed. Those settings will influence the battery level icon and low battery warning.

5.7.13.3.2 Internal Battery

S10x units have also a built-in internal battery where you can check the health and settings of this battery.

5.7.13.3.2.1 Health of the Battery

This shows the health of the internal battery and its charge level.
5.7.13.3.2.2 Settings of the Internal Battery

The following values can be set:

- Preserve battery = charger will not be activated until the battery drains below 75%.
- Charge to full = if it is not checked, the battery will be charged up to 90%.
- Charger mode = can be set to ON / OFF or automatic.

Automatic mode will stop charging, when charging current will be below 450mA. If preserve battery is enabled, charging will be done only when battery is below 75%.

⚠️ The internal battery will not supply power to any peripheral devices, such as compass module, remote stick, Flarm, PDA...

5.7.13.4 Remote Stick (NEW)

The remote stick is also connected to the CAN bus which is the main wiring of the S8x/S10x. The device must be registered in case of a two-seat device as it is possible to have two remote sticks; one registered to the main device and the other one to the second seat device.

Registering the remote stick can be done in the following way:
press any button on the remote stick – the S8x/S10X will detect the presence of the remote stick on the CAN BUS.

Go to Setup->Hardware->Remote stick.
To confirm the remote stick, you must press the OK button on the remote stick.

The process is similar for the second remote for the S8xD repeater unit. Be sure that at the time of registering repeater unit, front unit is not in Register mode, otherwise both units will listen to the same remote stick.

While remote stick is on different type of communication than Sxxx, user must specify for what purpose remote stick will be used when ordering one. In case of Sxxx instruments, there will be included adapter named Remote CAN. On one side is connected to CAN bus over DB9 connector and on the other side to appropriate wires of remote stick. Follow colour marks on spring contacts.

The Can bus is always under power, consequently the remote stick is also under power. After the flight disconnect the batteries or turn off the master switch to prevent discharging the batteries.
The remote stick is only recognized if the system is under external 12V power. It will not work if the S10/S100 is running on the internal battery only.

5.7.13.5  **Compass Module**

**TO BE DONE** – the compass module is not supported yet.

5.7.13.6  **Flaps**

When a flap sensor is installed, use this menu to set flaps position. **Toggle SC/Vario at** option allows you to select when (depending on flap position) will the instrument switch between SC or vario mode. Use the page selector to select the desired flap position. Press **SET** to set the position. Repeat this procedure for all flap positions.

When all flap positions are set, a green dot will be displayed with current flap position. If flap labels are not set yet, press **EDIT** to name label. Flap labels must be entered with increasing speed range. It is recommended that flap labels are set together with speed range in Polar and Glider setup. It is also possible to toggle between cruise and climb mode using the flap sensor.

5.7.13.7  **AHRS**

Once AHRS is activated as described in chapter 8.5.5, this menu is used to calibrate AHRS for installation error. Place your glider in levelled position and select **Level**. You can also modify **Pitch offset**.

While inflight pitch offset can be adjusted via the lower rotary knob.

In this menu AHRS can also be **Locked by Password**.
**AHRS locked** option serves for a judge at the competition. Judge can lock or unlock an AHRS with his own password. If he can’t unlock it with his password, it means that pilot has changed the password and used the AHRS.

### 5.7.13.8 CAN Bridge

CAN Bridge is an external device which is sold separately and is used to output NMEA data or to connect a radio or transponder to the system.

⚠️ See installation manual for details on the wiring of CAN Bridge.

Once CAN bridge is plugged in to the CAN BUS, Bridge Sxxxxxx will appear in the Hardware menu.

First, you must define functionality. The dialogue will change based on what you selected and will display related items.

#### 5.7.13.8.1 NMEA output
NMEA output is used to transmit NMEA sentences. You can select desired NMEA sentences and define baud rate at which they will be transmitted.

### 5.7.13.8.2 Radio bridge
Radio bridge is used to operate a radio through the main display unit. First the type of connected radio must be selected. For the list of supported devices please refer to CAN Bridge installation manual found on www.lxnav.com.

Due to Becker AR6201 not supporting RS-232 connections it is not supported yet.

Selecting **Config radio** will open the radio setup menu. In this menu you can select **Show target warnings**. This will trigger warnings generated from the device (example: radio is too hot). Here you can also setup **active** and **standby frequency**, **volume**, **squelch volume** and **VOX volume**.

### 5.7.13.8.3 XPDR Bridge
XPDR bridge can operate the transponder with the main unit. You can set ICAO Identity in XPDR Setup menu which is opened by clicking **Config XPDR**. It can also show target warnings from the transponder. For the list of supported devices please refer to CAN Bridge installation manual found on www.lxnav.com.
5.7.13.9 **Flarm**
If Flarm or PowerFlarm is connected to the system its info, config and aircraft config can be seen or configured in this menu.

![Flarm Configuration Menu](image)

5.7.13.9.1 **Info**
Here you can see all information about the external Flarm/PowerFlarm device. Available information is:
- Hardware
- Firmware
- FlarmID
- Serial Number
- Obstacle database
- Obstacle date

5.7.13.9.2 **Config**
Flarm configuration such as Flarm/PCAS and ADSB horizontal and vertical range can be set here. **Mode C/Do not track mode and Stealth mode** can be enabled or disabled.

5.7.13.9.3 **Aircraft config**
**Aircraft type** such as glider / Tow plane / Helicopter etc... can be set here. **ICAO address** is the code, which has to be set if Transponder is present.

5.7.13.9.4 **Flight recorder**
Flarm’s flight recorder settings can be modified in this menu.

5.7.14 **Polar and Glider**

5.7.14.1 **Polar**
The Polar and Glider section allows you to load and edit a set of parameters for your glider’s polar. You can select from a pre-defined list of nearly every common glider or make your own polar.
Select Glider from List: presents you with an alphabetical list of all the common gliders and associated polar data. All glider data will be copied from the chosen polar. Verify that the best glide ratio and minimum sink rate displayed. To see whether the polar data matches your glider’s performance review the MacCready Setting Menu where you can verify the values.

You can modify the polar by changing coefficients $a$, $b$ and $c$. A polar is defined as a quadratic equation with the parameters $a$, $b$, and $c$. Use the SeeYou program (Tools->Polar) to calculate coefficients $a$, $b$ and $c$ for a given glider’s polar. The program requires three sink points entered at selected speeds (e.g.: 100 km/h, 130 km/h, and 150 km/h). The program will calculate the values of $a$, $b$ and $c$, which should be noted and entered into the LXNAV S8x/S10x.

- **Class**: Options for Touring, Ultralight, World, Twin-seater, Club, 18-meter, 15-meter, Open, Standard and Unknown are available.
- **A, b, c**: Options can be adjusted or entered for a non-listed glider.
- **Reference load** (wing loading) value represents the value at which the polar was measured.
- **Reference weight** corresponds to the weight value at which the polar was measured.
- **Maximum take-off weight** is the maximum take-off weight allowed for the glider. It is not used in the calculation; it is just a reminder to the pilot of the maximum take-off weight. **Empty weight** is weight of the glider without the pilot and ballast.
- **Pilot weight** is the weight of the pilot with parachute and baggage.
- **Co Pilot Weight** is the weight of the co-pilot with parachute and baggage.

$$overload = \frac{Empty.glider\ weight + Pilot\ weight + Water\ ballast}{Minimum.glider\ weight}$$

In case of a two-seater configuration both users have possibilities to change parameters. The last change performed is synchronized into both instruments.
5.7.14.2 **Speeds**

The user can set the following speeds:

- Stall speed (VS0)
- Stall speed (VS1)
- Approach speed (Vapp)
- Best climb (Vec)
- Max flaps (Vfe)
- Manoeuvre speed (Va)
- Max speed (Vne)

These speeds will be used as warnings such as:

- Stall speed

5.7.14.3 **Flaps**

For setting up flaps please refer to Section 5.7.13.6 for more details.

5.7.15 **Profiles**

In this menu, the pilot can save his own settings in a profile. Different profiles are useful if more than one pilot is flying the same glider, or, if the glider has a different wing configuration (15m, 18m). All of the S8x/S10x settings are save in every individual profile (glider information, pilot information, user interface...).

With the lower rotary knob, a pilot can scroll between different profiles, the profiles are stored within the internal storage of the S vario. Please note, the profiles are not stored on the SD card.

When you select the profile, by pressing the lower rotary button, a sub menu will appear with the following options:

- **Edit** (edit name of the profile)
- **Active** (make that profile active)
- **Lock** (lock that profile. All later changes on the S vario will not be stored to profile, useful to protect a profile from changes in a club or syndicate environment)
- **New** (create new profile. You have the option to copy an existing selected profile or create a new factory default profile)
- **Save to SD** (copy the profile from the internal storage to the SD card)
- **Cancel** (do nothing and exit from that menu)
- **Delete** (delete selected profile) At power on, the profile selection menu will appear. A user can select between all the available profiles stored on the S vario.
5.7.16 Password

There are several system passwords which run specific procedures as listed below:

5.7.16.1 List of Password Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE WHOLE LOGBOOK</td>
<td>99999</td>
</tr>
<tr>
<td>RESET TO FACTORY DEFAULT</td>
<td>00666</td>
</tr>
<tr>
<td>AHRS LICENSE ACTIVATION / DEACTIVATION</td>
<td>30000</td>
</tr>
<tr>
<td>AUTO ZERO</td>
<td>01043</td>
</tr>
<tr>
<td>REPORT TO SD CARD</td>
<td>00111</td>
</tr>
<tr>
<td>UPDATE FIRMWARE</td>
<td>89891</td>
</tr>
<tr>
<td>FORMAT INTERNAL MEMORY (all data will be lost)</td>
<td>32233</td>
</tr>
</tbody>
</table>
5.7.17 Admin mode

In this menu a pilot can lock the unit and protect the settings with a password. If admin mode is selected and a password applied, the settings on the unit will be locked and are not able to be changed. This function is very useful in a club glider, where not all the pilots are experienced enough to setup the unit. In this case, the CFI will lock the unit with a password. The unit can be unlocked anytime with the same password. Do not forget set admin password. If forgotten the only way to recover is to type in password 00666 which resets the whole instrument to factory default and all settings will be lost.

5.7.18 About

In the about page, information about the display platform and the sensor box can be viewed.

The user can view the following details:

- IGC serial number
- Indicator version A and B
- Sensor box version A and B
6 Variometer and Altimeter

All signals from the pneumatic sensors (altitude, speed) are derived from high quality pressure sensors, which mean that no flask is necessary. The vario signal is derived from the altitude signal. All signals are temperature and altitude compensated. The colour display shows the vario information as well as many other parameters. The display is user configurable. The Variometer can be configured to show:

- **Range** 5, 10 and 2.5 m/s or 10, 20 and 5 kts.
- **Time constants** 0.1 s to 5 s, in addition there are 4 settings for electronic processing for the vario signal.
- **Netto** shows the air mass lift and sink.
- **Relative** shows the lift or sink that would be achieved if the glider was circling at thermaling speed.

There are two ways by which the vario indications can be corrected for total energy. Electronic TE compensation is based on speed changes with time and pneumatic compensation with a TE probe. The quality of the TE compensation depends entirely on the location, size and dimension of the TE tube. The installation must be leak-proof.

If an electronic TE compensation is selected the TE (Pst) port should be connected to a good static pressure source. If pneumatic compensation is selected the TE (Pst) port should be connected to the TE probe.

Electronic TE Compensation

Compensation with TE probe

6.1 Altimeter

The altimeter of the LXNAV S8x/S10X is temperature compensated from -20ºC up to + 60ºC. The altimeter is calibrated up to 20000 m.

6.2 Speed Command

Speed command flying based on the MacCready theory is a very useful tool to optimize cross-country speed. When the instrument changes to speed command mode the audio will change and become a director informing the pilot whether he is flying too fast or too slow. To reduce confusion between vario and speed command audio some special features are incorporated:

- Continuous audio signal and other kinds of signals can be chosen. For details see setup.
- No audio at correct speed (dead band).
7 Flying with the LXNAV S8x/S10x

To get the best out of the LXNAV S8x/S10x it is important that some preparation is made prior to take-off. Trying to configure the instrument or set a task while flying is very hazardous especially in a competition. Pre-flight preparation will help ensure that the flight will be both safe and enjoyable.

7.1 On the Ground

7.1.1 Power on Procedure
Press any of the rotary or push buttons to start the LXNAV S8x/S10x. The LXNAV S8x/S10x welcome screen will appear. The first screen shows the version of the boot loader, firmware, hardware and serial number. The boot procedure normally takes a few seconds. When completed the Set Elevation dialogue is displayed.

7.1.2 Set Elevation and QNH
This setting is crucial for final glide calculation: therefore, please pay careful attention to it.

The instrument will offer elevation over standard pressure level QNE. Use the knob to fine-tune the elevation. The QNH should be changed only when airfield elevation and QNH pressure are given. This might happen in some competitions. In all other cases the elevation should always match QNH pressure.

⚠️ The Set Elevation dialogues are not shown if the LXNAV S8x/S10x is switched off and on during flight.

⚠️ QNH can be also corrected during flight under Setup-QNH and RES menu.
7.1.3 Pre-flight Check

After elevation setup the LXNAV S8x/S10x will switch to the Info screen for normal operation mode.

Use the middle (Menu) button to scroll to Flarm, Waypoint or Task Screen to verify that the MacCready, Ballast, and Bugs settings are set to the expected values for the current flight.

In any of these screens press the lower rotary button to raise the dialogue box to check or set MacCready, Ballast and Bugs values.

Rotate the bottom knob to modify any setting. Next check the safety altitude (height above destination, arrival altitude) setting. Refer to Section 5.7.1.2 to find how to define the safety altitude.

7.2 Airborne

7.2.1 Final Glide Calculation

Final glide is a function calculated from the target distance, target elevation, altitude, wind component, MC setting and Bug setting. The S8x/S10x will have sufficient information to calculate this automatically if a GPS source is attached and the target to navigate to is set in Waypoint or Task screen. To display the Arrival Altitude (above Safety Altitude) make sure you have configured at least one of the navboxes on the primary or secondary screens to Arrival Altitude.
8 Installation

The LXNAV S8x/10x requires a standard 57 or 80mm cut-out. Three pressure connectors are fitted to the back of the S8x/S10x. A label shows their functions:

- $P_{\text{static}}$ means static pressure connector.
- $P_{\text{total}}$ means pitot or total pressure connector.
- TE means total energy TE pressure connector.

If the unit is to be configured for electronic TE compensation the connections are as follows:
- $P_{\text{static}}$ Static
- $P_{\text{total}}$ Pitot or Total pressure
- TE/$P_{\text{static}}$ Static

If the unit is to be configured for pneumatic TE compensation using a TE tube, then the connections are:
- TE/$P_{\text{static}}$ TE tube
- $P_{\text{static}}$ Static
- $P_{\text{total}}$ Pitot or Total pressure

⚠️ If the $P_{\text{total}}$ and Static are connected the wrong way around there will be no integrator (average climb) and speed to fly indication during the flight.

The LXNAV S8x/S10x is connected to 12 Volt power supply via the 15-pin SUB-D connector. Optionally the LXNAV S8xD can be connected via the CAN bus and the connectors are labelled with “CAN” at each end.
8.1 Installing the LXNAV S8x/S10x

The LXNAV S8x/S10x vario should be mounted in a standard 80 mm hole.

Remove the two rotary knob caps with a knife or flat screw driver, then hold each knob and unscrew it. Remove the remaining two screws and the two M6 threaded nuts. Install the S8x/S10x into the panel and screw back all screws, nuts and knobs. Ensure that between the knobs and the panel there is sufficient space so that the button can be pushed.

Ensure that the LXNAV S8x/S10x is located far enough from the compass.

8.2 Connecting the LXNAV S8x/S10x

The LXNAV S8x/S10x is connected to the 12V DC power supply. The red wire goes to + positive and blue wire goes to – ground. If you don’t use the S8xD (second seat unit) the Can connector should be left terminated with a CAN terminator. The SC cable is used for the external switch intended for switching between climb and cruise mode.
8.3 Cut-outs

8.3.1 Cut-out for S8 and S10

8.3.2 Cut-out for S80 and S100

⚠️ Length of the screw is limited to max 4mm!
# 8.4 Available Cables for GPS/Flarm and PDA Ports

## GPS / Flarm port (on S10x)

<table>
<thead>
<tr>
<th>Device</th>
<th>Cable Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nano power</td>
<td>CC-NP-LX (RX/TX are crossed)</td>
</tr>
<tr>
<td>Generic RS232 with female DB9</td>
<td>V7-GPS-232</td>
</tr>
<tr>
<td>Flight recorders, FLARMs with standard 6p IGC connector RJ12 type, Red Box, Colibri, Colibri2, VL</td>
<td>V7-GPS-IGC</td>
</tr>
<tr>
<td>Power Flarm (RJ45), K6 mux</td>
<td>V7-GPS-PF</td>
</tr>
<tr>
<td>Power Flarm Core</td>
<td>V7-GPS-PFCORE</td>
</tr>
</tbody>
</table>

## PDA Port (on S10x and S10xD)

<table>
<thead>
<tr>
<th>Device</th>
<th>Cable Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUDIE</td>
<td>CC-NP-OUDIE1</td>
</tr>
<tr>
<td>Generic RS232 with female DB9</td>
<td>CC-NP-232</td>
</tr>
<tr>
<td>IPAQ 310/314</td>
<td>CC-NP-IPAQ310</td>
</tr>
<tr>
<td>IPAQ 38/39xx/47xx</td>
<td>CC-NP-38</td>
</tr>
<tr>
<td>MiniMap</td>
<td>CC-NP-LX</td>
</tr>
<tr>
<td>Butterfly Connect</td>
<td>CC-NP-BFC</td>
</tr>
</tbody>
</table>

The PDA and GPS are not designed in accordance with IGC standard. It can be used only with a dedicated cable. Do not plug an unknown cable to it as it may damage the LXNAV S8x/S10x unit.
8.5 Installation of Options

The LXNAV S8x can be connected to a 2\textsuperscript{nd} seat repeater unit LXNAV S8xD, remote stick, magnetic compass and AHRS options.

8.5.1 S8xD Option (Repeater)

In two-seat gliders it is possible to install the LXNAV S8xD rear seat device. The S8xD looks almost identical to the S8x; in fact, it runs the same software as the first seat device. The basic idea of the two-seat configuration is that both devices work independently from each other with the possibility of automatically exchanging various items of data (volume, MC, polar...).

Data Exchange

All data is exchanged between the front and rear units. The LXNAV S8x/S10x also exchanges data with GPS and PDA. Change of MC, Bal, Bugs, Volume, polar settings... on a PDA will also influence the LXNAV S8x/S10x. The same will happen also in the opposite direction.
8.5.2 Magnetic Compass (Compass – CAN)
UNDER DEVELOPMENT

When simply connected to CAN bus the main unit will recognize it. This option is not released yet but is planned for a future software release.

The Can bus is always under power; hence the compass module is also under power. After flight, disconnect batteries or turn off master switch to prevent discharging batteries.

8.5.3 Flap sensor (Flap – CAN)

Flap sensor must be connected to CAN bus, through CAN bus (Y) splitter. Remaining port on Y CAN splitter must be terminated with CAN terminator.

8.5.4 Remote Stick (Remote-CAN)

The remote stick is also connected to the CAN bus. On the S8x/S10x a special menu is provided to register the remote stick. The device must be registered in case of two-seat device; it is possible to have two remote sticks, one registered on the front and another on the rear device.
Registering a remote stick can be done on following way. Press any button on the remote stick – in this way the S8x/S10x will detect the presence of the remote stick on the CAN BUS, after that go under setup-hardware-remote and register remote stick.

**To confirm a remote stick, you must press the OK button on the remote stick.**

The same is done with a second remote for S8xD repeater unit. Ensure that when registering the repeater unit that the front unit is not in Register mode, otherwise both units will listen to the same remote stick.

The Can bus is always under power, consequently the remote stick is also under power. After flight, please disconnect batteries or turn off master switch to prevent discharging batteries.

### 8.5.5 AHRS Option
To activate AHRS an activation code must be purchased.

The AHRS option can be activated by the following procedure:
- Enter password 30000
- Enter the 13-digit license key and confirm.

If the code is correct you will see an AHRS on the AHRS page.

Activating AHRS on main unit will also activate it on all the repeaters (second seat devices).

If you want to deactivate AHRS use same password (30000) again.
8.6 Ports and Wiring

8.6.1 LXNAV S8x Ports

8.6.1.1 PDA Port (RJ45)

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>(output) Transmit from LXNAV S8XRS232 (e.g. Computer, IPAQ38/39xx)</td>
</tr>
<tr>
<td>4</td>
<td>(input) Receive to LXNAV S8XRS232 (e.g. Computer, IPAQ38/39xx)</td>
</tr>
<tr>
<td>5</td>
<td>(output) Transmit from LXNAV S8XLV-TTL (3.3V) (e.g. Oudie, HP302, HP31x)</td>
</tr>
<tr>
<td>6</td>
<td>(input) Receive to LXNAV S8XLV-TTL (3.3V) (e.g. Oudie, HP302, HP31x)</td>
</tr>
<tr>
<td>7,8</td>
<td>5V OUTPUT (maximum 1A)</td>
</tr>
</tbody>
</table>

The RJ45 plug is NOT designed in accordance with the IGC standard. It can be used only with dedicated cable. Do not plug an unknown cable to it as it may damage the LXNAV S8Xunit.
8.6.1.2 **GPS Port (RJ12)**

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(output) 12V DC, to supply GPS (Maximum 2A)</td>
</tr>
<tr>
<td>2,3</td>
<td>N.C.</td>
</tr>
<tr>
<td>4</td>
<td>(input) Receive to LXNAV S8XRS232 (e.g. NANO power 232)</td>
</tr>
<tr>
<td>5</td>
<td>(output) Transmit from LXNAV S8XRS232 (e.g. NANO power 232)</td>
</tr>
<tr>
<td>6</td>
<td>Ground</td>
</tr>
</tbody>
</table>

8.6.1.3 **Main Port**

The main port is used to connect the S8X to the main wiring loom.

8.6.1.4 **Audio Port**

The supplied speaker is connected with a standard 3mm phono jack.

⚠️ This port is designed to be connected with an 8-ohm speaker supplied with the S8x. Please consult with your dealer if you want to make a different connection.
8.6.2 Wirings

8.6.2.1 LXNAV S8X Wiring

Newer versions of wirings can have the power supply cable shielded with black and white colour. White is +12V DC (positive pole) and black is GND (negative pole).

If a CAN BUS cable is not connected to an LXNAV S8xD, the CAN connector must be terminated with a CAN TERMINATOR!

8.6.2.2 LXNAV S10x Wiring
The rear seat device is powered from the first seat device.
8.7 S8x/S10x Configurations

8.7.1 Symbols

- Female
- Male

8.7.2 Nano/Nano3 – Sxxx - MiniMap

8.7.3 Nano3 - Sxxx - Oudie
8.7.4 Colibri II – Sxxx - Oudie

8.7.5 Colibri/Volkslogger - Sxxx - Oudie
8.7.6 Flarm – Sxxx - FlarmViewX - Oudie

GND 12V CAN cable

Flarm Red box FlarmMouse

Flarm Splitter FlarmView cable

Remote CAN

CAN Y cable

Terminator

8.7.7 FlarmMouse - ADSB – Sxxx - FlarmView - Oudie

GND 12V CAN cable

Flarm Red box FlarmMouse

Flarm Splitter FlarmView cable

Remote CAN

CAN Y cable

Terminator
8.7.8 FlarmMouse – Sxxx - Oudie

8.7.9 FlarmMouse – Sxxx – Oudie – Flaps Sensor
8.7.10 FlarmMouse - Nano3 - Sxxx - Oudie

PowerMouse + (Nano3) - Sxxx - Oudie
8.7.11 S8x/S10x– S8xD

- S8x/S10x
- Flarm Splitter
- FlarmView2
- FlarmView cable
- CAN cable
- Remote CAN
- Oudie
- Remote stick
- Remote CAN
- Terminator
- CAN Y cable
- PDA CAN

Connections:
- GND
- 12V
- CAN Y cable
- Remote CAN
- Oudie
- Remote stick
# 8.8 Data Transfer

## 8.8.1 S8x/S10x

<table>
<thead>
<tr>
<th>Data Transfer/Action</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>S8x/S10x ↔ Oudie / Oudie BT</td>
<td>MC/Ballast/Bugs; ALT; TSK declaration; Pilot declaration</td>
</tr>
<tr>
<td>S8x/S10x → Flarm</td>
<td>Task declaration</td>
</tr>
<tr>
<td>S8x/S10x → Nano / Nano3</td>
<td>TSK declaration</td>
</tr>
<tr>
<td>S8x/S10x, also BT ↔ XC soar</td>
<td>MC/Ballast/Bugs; ALT; TSK declaration; Pilot declaration</td>
</tr>
</tbody>
</table>

## 8.8.2 Other Data Transfers

<table>
<thead>
<tr>
<th>Data Transfer/Action</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flarm → XC soar / Oudie</td>
<td>Flight transfer Via direct link</td>
</tr>
<tr>
<td>XC Soar/Oudie → Flarm</td>
<td>Task declaration Via direct link</td>
</tr>
<tr>
<td>Nano/Nano3 → XC soar / Oudie</td>
<td>Task declaration, flight download? Via direct link</td>
</tr>
</tbody>
</table>
9 Firmware Update

Firmware updates for the main display indicator and vario unit can be easily carried out using the micro SD Card. Please visit our webpage www.lxnav.com and download the firmware update.
You can also subscribe to a newsletter to automatically receive news about the system.

9.1 Updating LXNAV S10x and S8x Firmware Using a Micro SD Card

Copy the firmware ZFW file type to the SD card. The S10x will ask you to update. After confirmation the firmware update will be performed automatically.

⚠️ The rear seat device is not automatically updated while updating the first seat, but it needs to be updated separately.

9.2 Updating LXNAV S8x Firmware Using a Micro SD Card (up to fw. 5.43)

Unzip the file from the website and put all three files to the SD card:
- App_NINC_X.YY.lxfw
- V80C.fw
- V80c_init.bin

If some of these files are missing or are corrupt, the firmware update will not be successful. Transfer the firmware update files to the micro SD card and insert it into the S8x. The unit will ask you UPDATE? Confirm and reboot the S8x unit. The update will be performed automatically.

9.3 Updating LXNAV S8x Firmware Using a Micro SD Card (OLD Method)

The firmware consists of two parts, vario and display. The firmware can be downloaded from the download-firmware section on www.lxnav.com. It is a compressed ZIP file which must be firstly uncompressed. Inside are three files:
- App_NINB_X.YY.lxfw (this is firmware for vario part),
- V80C.fw (first part of firmware for display part),
- V80c_init.bin (second part of firmware for display part).
If some of these files are missing or are corrupt, the firmware update will not be successful. Transfer the firmware update files to the micro SD card and insert it into the S8x. Reboot the S8x and the update of the display part will be performed automatically.

- Go to the Setup screen and select the password option.
- Enter the password 89891 - this will bring you to the firmware update menu.
- Choose the correct firmware for the vario part and press update.

### 9.4 Incomplete update message (OLD version)

Update file contains 3 files:
- V8xc.fw
- V8xc_init.bin
- App_NINC_XX.lxfw

If V8xc_init.bin is missing, the following message will appear “Incomplete update …”

All updates after version 5.45 contains all 3 files zipped in one file
1. How can I save the IGC file?
   Go to the logbook page, select the flight of interest, short press on the lower rotary button and download the flight to the micro SD card.

2. Is it possible to interface with an iPad/iPhone/other iOS device?
   That is not possible.

3. I don't see how you charge the actual unit whilst it is bolted into the plane?
   Via the main power cable which is supplied with the device.

4. Do I have to put the fuse between the master switch and battery?
   Yes, use a 3A fuse.

5. Can pin 3 of the (now free) PDA port be configured to provide ADSb data at 4800 baud and a NMEA filter (GPRMC only) to a transponder?
   No, the PDA port is our standard and will never be changed. For a transponder we can provide a NMEA bridge.

6. Does the Bluetooth connection with the Oudie have all functions of the PDA port?
   Yes.

7. Can the original old flat FLARM box be connected to the Flarm port?
   Yes.

8. Does the delivery include an external GPS aerial on S10x?
   Yes, but only on the S10x.
# 11 Revision History

<table>
<thead>
<tr>
<th>Month</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2014</td>
<td>Initial release version 4.9</td>
</tr>
<tr>
<td>November 2014</td>
<td>Updated chapters 8.5.2, 8.5.3</td>
</tr>
<tr>
<td>December 2014</td>
<td>Updated chapters 5.3.2, 5.5.1.2, 7.2.1</td>
</tr>
<tr>
<td>January 2015</td>
<td>Updated chapter 5.7.13.2</td>
</tr>
<tr>
<td>January 2015</td>
<td>Typos, release 4.97a</td>
</tr>
<tr>
<td>January 2015</td>
<td>New cables for PDA and GPS port ch.8.4</td>
</tr>
<tr>
<td>March 2015</td>
<td>New sections for thermal assistant and logbook</td>
</tr>
<tr>
<td>May 2015</td>
<td>Typos, release 501e</td>
</tr>
<tr>
<td>June 2015</td>
<td>Release 501f, updated ch.8.5.3, updated ch.5.7.5.1</td>
</tr>
<tr>
<td>June 2015</td>
<td>New chapter Quick access menus 0</td>
</tr>
<tr>
<td>March 2016</td>
<td>Complete review of the manual added S10x</td>
</tr>
<tr>
<td>June 2016</td>
<td>Units chapter, Warnings, Added OAT to Info page, update procedure for S8x, Voice warnings completely described</td>
</tr>
<tr>
<td>August 2016</td>
<td>Review of English language content (Thanks to Howard Mills)</td>
</tr>
<tr>
<td>August 2016</td>
<td>Added Flap navboxes</td>
</tr>
<tr>
<td>August 2017</td>
<td>Updated chapter 5.7.13.4, Updated connection schemes 8.7</td>
</tr>
<tr>
<td>September 2017</td>
<td>New Chapters 0, 0, Updated Ch. 5.5.2</td>
</tr>
<tr>
<td>October 2017</td>
<td>New chapter 5.7.16</td>
</tr>
<tr>
<td>December 2017</td>
<td>Updated chapter 8.5</td>
</tr>
<tr>
<td>January 2018</td>
<td>Minor change in chapters 0, 0</td>
</tr>
<tr>
<td>March 2018</td>
<td>New chapter S8/S80 Club 3.2.3, CAN Bridge 5.7.11.7, AHRS 5.7.11.9 and Flaps 5.7.11.8 Updated chapters: 5.7.2, 5.7.3, 5.7.12, 8.5.5</td>
</tr>
<tr>
<td>June 2018</td>
<td>New chapters: 5.1.15, 5.1.16, 5.1.17 Updated chapters: 5.2, 5.7.8, 5.7.12, 5.7.16</td>
</tr>
<tr>
<td>July 2018</td>
<td>Added chapter: 8.7.9 Updated chapter: 5.7.11.8</td>
</tr>
<tr>
<td>November 2018</td>
<td>Corrected ch.5.7.9.2.1.1, Updated:2.5,2.6</td>
</tr>
<tr>
<td>February 2019</td>
<td>Updated/Corrected/Added: 5, 0, 0, 5.1.3.1.2, 5.1.5, 5.1.6, 5.5.2, 5.7, 5.7.5.2, 5.7.5.1, 5.7.5.3, 5.7.5.4, 5.7.8.1, 5.7.8.1.7, 5.7.8.1.8, 5.7.8.2, 5.7.8.4.2, 5.7.8.6.2, 5.7.8.7.1, 5.7.11.1, 5.7.11.1.2, 5.7.11.1.7</td>
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