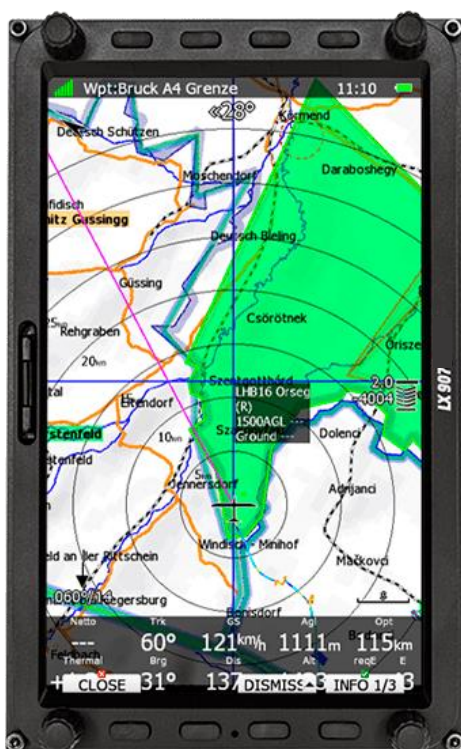


# LX90x and LX80x

GPS-Navigation System

Version 7.10

Revision 1



LXNAV d.o.o. • Kidričeva 24, 3000 Celje, Slovenia • tel +386 592 33 400 fax +386 599 33 522

[info@lxnav.com](mailto:info@lxnav.com) • [www.lxnav.com](http://www.lxnav.com)

<b>1</b>	<b>Important Notices</b>	<b>6</b>
1.1	Limited Warranty	6
1.2	Sunburned Display Warranty	7
<b>2</b>	<b>Basics</b>	<b>8</b>
2.1	The LX90x/LX80x Series at a Glance	8
2.1.1	Display Unit Features	9
2.1.2	Interfaces	9
2.1.3	Internal Options	9
2.1.4	External Options	10
2.1.5	Simulator	11
2.1.6	Technical Data	12
2.1.6.1	LX900 System	12
2.1.6.2	LX905 System	12
2.1.6.3	LX907 System	12
2.1.6.4	LX800 System	12
2.1.6.5	LX808 System	12
2.1.7	Weight	13
<b>3</b>	<b>Packing Lists</b>	<b>14</b>
3.1	LX90x with FLARM Option	14
3.2	LX90x	14
3.3	LX80x with FLARM Option	14
3.4	LX80x	14
<b>4</b>	<b>System Description</b>	<b>15</b>
4.1	Rotary Switches and Buttons	15
4.1.1	Landscape Orientation	15
4.1.2	Portrait Orientation	17
4.1.3	Buttons	17
4.1.3.1	Power Button	17
4.1.4	Rotary Switches (Knobs)	17
4.2	Switching on the Unit	18
4.3	User Input	18
4.3.1	Text Edit Control	19
4.3.2	Masked Text Edit Control	19
4.3.3	Spin Control	20
4.3.4	Selection Control	20
4.3.5	Checkbox and Checkbox List	20
4.3.6	Colour Selector	20
4.3.7	Font Selector	21
4.3.8	Line Pattern Selector	21
4.3.9	Pull Down Menu	22
4.4	Switching Off	22
<b>5</b>	<b>Operating Modes</b>	<b>24</b>
5.1	Setup Mode	26
5.1.1	QNH and RES	26
5.1.1.1	QNH*	27
5.1.1.2	Safety Altitude	27
5.1.1.3	Magnetic Variation	27
5.1.2	Flight Recorder	27
5.1.3	Display	28
5.1.4	Files and Transfers	29
5.1.4.1	Uploading User Airspace and Waypoints by using LOAD button	29
5.1.4.2	Uploading Airspace and Airports Database (ASAPT)	30
5.1.4.3	Downloading and Uploading via Storage Service	30

5.1.4.4	Airspace	31
5.1.4.5	Airports	34
5.1.4.6	Waypoints and Tasks	35
5.1.4.7	Maps	36
5.1.4.8	Flights	41
5.1.4.9	Flight Declaration	41
5.1.4.10	Formatting a SD Card	42
5.1.4.11	Update Databases	43
5.1.4.12	PDF Documents	43
5.1.4.13	Checklists	45
5.1.5	Graphics	49
5.1.5.1	Map and Terrain	49
5.1.5.2	Weather	51
5.1.5.3	Airspace and NOTAMs	54
5.1.5.4	Waypoints and Airports	55
5.1.5.5	Glider and Track	57
5.1.5.6	Route	58
5.1.5.7	FLARM	59
5.1.5.8	Misc	60
5.1.6	Warnings	60
5.1.7	Units	62
5.1.8	Hardware*	62
5.1.8.1	Remote Stick*	63
5.1.8.2	FLARM*	64
5.1.8.3	Battery Types*	66
5.1.8.4	Analog Inputs	66
5.1.9	Profiles and Pilots	67
5.1.9.1	Add/Load Profile	68
5.1.9.2	LX Styler	70
5.1.9.3	Sync	71
5.1.10	LXNAV Connect	72
5.1.10.1	LXNAV Connect Login	72
5.1.10.2	Services	73
5.1.10.3	Profiles	77
5.1.10.4	LXNAV Connect Limitations	79
5.1.11	Language	80
5.1.12	Passwords	80
5.1.13	Admin Mode	81
5.1.14	About	82
5.1.14.1	Debug Report	83
<b>5.2</b>	<b>Information Mode</b>	<b>83</b>
5.2.1	GPS Status Page	83
5.2.2	Position Report	85
5.2.3	Satellite Sky View	85
5.2.4	Network Status	86
<b>5.3</b>	<b>Near Mode</b>	<b>86</b>
<b>5.4</b>	<b>Statistics Mode</b>	<b>87</b>
5.4.1	Logbook	88
5.4.1.1	Upload to OLC	89
5.4.2	Statistics During Flight	90
5.4.2.1	General Statistics	91
5.4.2.2	Detailed Task Statistics	91
5.4.2.3	OLC Statistics	92

<b>5.5</b>	<b>Navigation Mode</b>	<b>93</b>
5.5.1	Initial Navigation Page	93
5.5.2	Second Navigation Page	94
5.5.3	Third Navigation Page	95
5.5.4	Fourth Navigation Page	95
5.5.5	Fifth Navigation Page	96
5.5.6	Button actions Related Only to the Nav Page	96
5.5.6.1	Select an Airport	96
<b>5.6</b>	<b>Waypoint Mode</b>	<b>100</b>
5.6.1	Button Actions Related Only to The WPT Page	100
5.6.1.1	Editing Waypoints	100
5.6.1.2	New Waypoint	101
5.6.1.3	Delete Waypoint	102
<b>5.7</b>	<b>Route Mode</b>	<b>102</b>
5.7.1	Button Actions Related Only to the RTE Page	104
5.7.2	Route Edit	104
5.7.2.1	View options	105
5.7.2.2	Starts (Multiple Start Points)	105
5.7.2.3	Zone (Modifying Zones)	106
5.7.2.4	Route Options	107
5.7.3	NEW route (Route Creation)	108
5.7.4	Creating a Route in SEEYOU	109
5.7.5	Loading a Route	110
5.7.5.2	Map Edit Mode	111
<b>6</b>	<b>Navigational Page Layout</b>	<b>112</b>
<b>6.1</b>	<b>Navigation Page Options</b>	<b>112</b>
6.1.1.1	Map Settings	112
6.1.1.2	Wind	116
6.1.1.3	Airspace	117
6.1.1.4	Mark	118
6.1.1.5	Night	118
6.1.2	Map and Plane (Plane Symbol)	118
6.1.3	Orientation Symbol	119
6.1.4	Final Glide Symbol	119
6.1.4.1	Final Glide Character Explanation	119
6.1.5	Battery Indicator	120
6.1.6	GPS Indicator	120
6.1.7	Wind Arrow and Thermal Assistant	121
6.1.8	Zoom	122
6.1.9	Side View	122
6.1.10	Picture	122
6.1.11	History	122
6.1.12	FLARM Radar	123
6.1.13	Wi-Fi Indicator	123
6.1.14	Wind Profile	123
<b>Flying with the System</b>		<b>124</b>
<b>6.2</b>	<b>On the Ground</b>	<b>124</b>
6.2.1	Power-On Procedure	124
6.2.2	Profile Selection	124
6.2.3	Set Elevation and QNH	125
6.2.4	Pre-Flight Check	125
6.2.5	Preparing a Route	125
<b>6.3</b>	<b>Flying a Route</b>	<b>126</b>



6.3.1	Starting a Route	126
6.3.2	Restarting a Route	127
6.3.3	Over Turn Point	127
6.3.4	Route Finish	128
6.3.5	Graphical Final Glide Assistants	128
<b>6.4</b>	<b>Procedure After Landing</b>	<b>130</b>
<b>7</b>	<b>Firmware Update</b>	<b>131</b>
<b>7.1</b>	<b>Updating the Main Display Firmware</b>	<b>131</b>
7.1.1	Updating Via Wi-Fi Module	132
<b>7.2</b>	<b>IGC Barograph Recalibration Procedure</b>	<b>134</b>
<b>8</b>	<b>Options</b>	<b>135</b>
<b>8.1</b>	<b>FLARM</b>	<b>135</b>
8.1.1	Installation	135
8.1.2	FLARM Update Procedure	136
8.1.3	Uploading Obstacles	136
8.1.4	FLARM Update Procedure with FlarmTool from PC	137
8.1.5	Uploading Obstacles with FlarmTool From PC	138
8.1.6	Uploading FlarmNet Files	139
<b>8.2</b>	<b>External FLARM or PowerFlarm</b>	<b>139</b>
8.2.1	Installation	140
<b>8.3</b>	<b>ADS-B update</b>	<b>140</b>
<b>8.4</b>	<b>Remote Control</b>	<b>141</b>
8.4.1	Functions	142
8.4.2	Installation	143
<b>9</b>	<b>Revision History</b>	<b>144</b>

# 1 Important Notices

The LXNAV 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 very carefully and are important for operating the system.



Notes with a red triangle describe procedures which 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.

## 1.1 Limited Warranty

This LXNAV 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 labor, provided that 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. LXNAV Instrument displays damaged by direct or magnified sunlight are not covered under warranty.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL LXNAV BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. LXNAV retains the exclusive right to repair or replace the unit or software, or to offer a full refund of the purchase price, at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

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

## **1.2 Sunburned Display Warranty**

Any kind of display including LXNAV instrument display screens can be damaged / burned by strong sunlight magnified by canopies in certain positions. We suggest you to cover your device from the direct sunlight, especially if the canopy is open.

LXNAV Instrument displays damaged by direct or magnified sunlight are not covered under warranty.

January 2020

© 2020 LXNAV. All rights reserved.

## 2 Basics

### 2.1 The LX90x/LX80x Series at a Glance

The unit includes an integral 50-channel GPS receiver and a high brightness colour display. An integrated SD card or USB interface is used for user-friendly data exchange. Some of the models also feature a PDA port for easy connection to an external PDA device. The main display unit is equipped with a built-in flight recorder compliant with the most recent IGC specification for all flights. Optionally the FLARM collision avoidance system can be integrated into the main display unit.

Main display unit comes in different forms:

- **LX808** model with 2.8" screen and 320x240 pixels resolution,
- **LX800** model with 3.5" screen and 320x240 pixels resolution,
- **LX905** model with 5.0" screen and 800x480 pixels resolution,
- **LX900** model with 5.6" screen and 640x480 pixels resolution,
- **LX907** model with 7.0" screen and 800x480 pixels resolution.

Optionally additional vario indicators and a wide range of interface devices can be daisy-chained using the RS485 bus.

## 2.1.1 Display Unit Features



Extremely bright colour displays readable in all sunlight conditions with backlight automatically adapted using an ambient light sensor (ALS).

- Using the Linux operating system (not CE Windows) ensures fast and stable operation of the firmware.
- 6 or 8 push buttons and 4 rotary switches (knobs) are used for input, which comprise the well-known LX user interface. Optionally a remote stick is available for more comfort.
- Portrait or landscape orientation (portrait orientation is not available on LX80x models).
- Pre-loaded with worldwide terrain maps, airspace and airport databases.
- Unlimited number of waypoints.
- Unlimited number of routes.
- Comprehensive flight and route statistics.
- Display of nearest airports.
- Unlimited number of pilots/profiles.
- Integrated flight recorder according to high-level IGC specification.
- Flights stored in IGC format are downloadable using the integrated SD Card.
- Flight recorder functions include an integral pressure transducer based on 1013 mbar level for altitude recording, engine noise level sensor, memory to store more than 1000 hours of flights and digital and mechanical security devices to ensure a high level of security.
- Integrated FLARM collision avoidance system with graphic, sound and voice (optional) presentation.

## 2.1.2 Interfaces

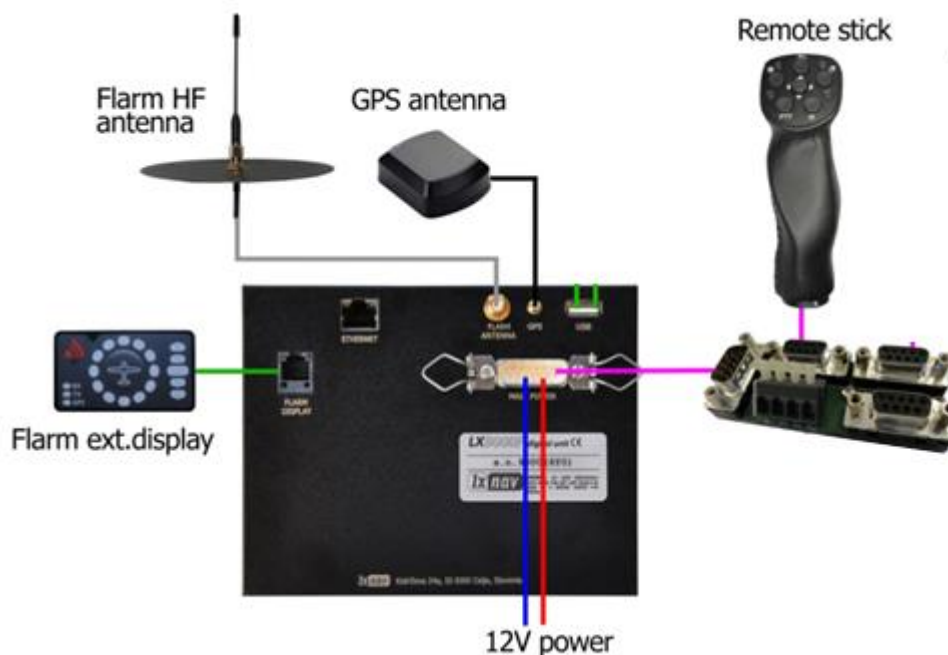
- The RS232 interface has NMEA output for external devices.
- An SD Card interface.
- A USB slot for data transfer using USB memory stick.

## 2.1.3 Internal Options

A **FLARM module** can be built into the main display unit. All necessary connectors are available on the rear side of the unit (FLARM external indicator, FLARM antenna), which guarantees the same comfort as with the original FLARM devices. It is very important to point out that the whole system uses only one GPS receiver and therefore offers a low power solution.

An **Artificial horizon** can be enabled on main display unit. If pilot would like to see the artificial horizon an additional software option to do so must be purchased.

## 2.1.4 External Options



By using a RS485 bus system a wide range of optional interfaces can be easily connected to the basic configuration with minimal installation work. The LXNAV bus system can be extended easily by use of RS485 splitting units, which allow plug and play connection of optional devices.

The following units can be connected to the main system:

- **Remote Control:** An extremely ergonomic leather-coated handle which includes 8 push buttons to operate the main display unit and also two additional buttons with open wires. These two buttons can be used for instance as PTT for radio and SC/Vario changeover command. A second remote control can be installed to control the second seat device or for side by side operation.
- **Wi-fi module**
- **External FLARM module**

### **2.1.5 Simulator**

There are two possibilities to become familiar with your system. LXSim is a free of charge program, which you can download from [www.lxnav.com](http://www.lxnav.com) or data from the Condor PC flight simulator ([www.condorsoaring.com](http://www.condorsoaring.com)) can be received via the RS232 port after entering suitable passwords (see Section 5.1.10).

These features are extremely useful for pilots who want to learn about the system and also wish to refresh their knowledge after a winter break. Please note that altitude data will be sent from the simulator which means that real final glide training will be possible.

## 2.1.6 Technical Data

### 2.1.6.1 LX900 System

- Power input 10-16 V DC
- Consumption at 12 V:
  - 250 mA - minimum brightness without audio and options
  - 260 mA - minimum brightness without audio and with FLARM
  - 470 mA - maximum brightness without audio and options
  - 480 mA - maximum brightness without audio and with FLARM
  - 160 mA – additional for a V8 vario unit.
- Cut-out dimensions of the LX900 display unit are 109 x 143 mm; outline dimensions: 113 x 145 x 38 mm exclusive connector.

### 2.1.6.2 LX905 System

- Power input 10-16 V DC
- Consumption at 12 V:
  - 250 mA - minimum brightness without audio and options
  - 260 mA - minimum brightness without audio and with FLARM
  - 470 mA - maximum brightness without audio and options
  - 480 mA - maximum brightness without audio and with FLARM
  - 160 mA – additional for a V8 vario unit.
- Cut-out dimensions of the LX905 display unit are 134 x 79 mm; outline dimensions: 136 x 83 x 61 mm exclusive connector.

### 2.1.6.3 LX907 System

- Power input 10-16 V DC
- Consumption at 12 V:
  - 250 mA - minimum brightness without audio and options
  - 260 mA - minimum brightness without audio and with FLARM
  - 470 mA - maximum brightness without audio and options
  - 480 mA - maximum brightness without audio and with FLARM
  - 160 mA – additional for a V8 vario unit.
- Cut-out dimensions of the LX90 display unit are 109 x 179 mm; outline dimensions: 113 x 181 x 38 mm exclusive connector.

### 2.1.6.4 LX800 System

- Power input 10-16 V DC
- Consumption at 12 V:
  - 290 mA - minimum brightness without audio and options
  - 300 mA - minimum brightness without audio and with FLARM
  - 380 mA - maximum brightness without audio and options
  - 390 mA - maximum brightness without audio and with FLARM
  - 160 mA – additional for a V8 vario unit.
- Cut-out dimensions of the LX800 digital unit are 93.5 x 81.5 mm; outline dimensions: 98 x 88 x 115 mm exclusive connector.

### 2.1.6.5 LX808 System



- Power input 10-16 V DC
- Consumption at 12 V:
  - 160mA at 50% LCD brightness (600nits still readable under sunlight)
  - 260mA with integrated FLARM at 100% LCD brightness (1200nits)
  - 160 mA – additional for a V8 vario unit.
- Cut-out dimension of the LX808 digital unit is 80 mm (3") standard aircraft cut-out; outline dimensions are 81mm x 81mm x 65mm exclusive connector.

### **2.1.7 Weight**

- LX900 display unit: 650 g
- LX905 display unit: 515 g
- LX907 display unit: 650 g
- LX800 digital unit: 580 g
- LX808 digital unit: 400 g

## **3 Packing Lists**

### **3.1 LX90x with FLARM Option**

- LX900, LX905 or LX907 main display unit
- Main power cable for main display unit
- SD card
- GPS antenna
- FLARM Antenna
- Hex key "Inbus"
- USB key containing the digital version of the Manual.

### **3.2 LX90x**

- LX900, LX905 or LX907 main display unit
- Main power cable for main display unit
- SD card
- GPS antenna
- Hex key "Inbus"
- USB key containing the digital version of the Manual.

### **3.3 LX80x with FLARM Option**

- LX800 or LX808 main display unit
- Main power cable for main display unit
- SD card
- GPS antenna
- FLARM Antenna
- Hex key "Inbus"
- USB key containing the digital version of the Manual.

### **3.4 LX80x**

- LX800 or LX808 main display unit
- Main power cable for main display unit
- SD card
- GPS antenna
- Hex key "Inbus"
- USB key containing the digital version of the Manual.

## 4 System Description

The main display unit of the LX90x series can be mounted with portrait or landscape orientation. After installing the main display unit, the orientation must be defined via the Display menu. The main display unit of the LX80x series units can be mounted only in landscape mode.



In this manual all screenshots are given for portrait orientation of the LX900 system, which is the most commonly used unit. However, all functionality is the same in any other configuration of system. Minor differences are shown further in the manual.

### 4.1 Rotary Switches and Buttons

The following controls are mounted on the front face of the main display unit:

- Four rotary selector knobs
- Eight (LX90x) or six (LX80x) push-buttons
- SD card reader.

#### 4.1.1 Landscape Orientation





### 4.1.2 Portrait Orientation



### 4.1.3 Buttons

All buttons have a dynamic function; the first time one presses each button its function is displayed without executing any action. Not all buttons have a function on every page. In some cases, buttons have a long press function.

#### 4.1.3.1 Power Button

The power button is marked with the ON/OFF symbol. It has multiple functions. Primarily it is used to switch the system on and off.

### 4.1.4 Rotary Switches (Knobs)

The main display unit has four rotary knobs. Each has a single function with the exception of the zoom knob which has in some cases a function other than zoom. With the upper-left rotary knob the volume can be adjusted. The upper-right rotary switch is the mode selector (it changes the mode of the operation). At the lower-right is the up/down knob which is used for selecting sub-pages, sub-menus and editing menus. At the lower-left is the zoom knob which is multifunctional. While its main function is to change the zoom level within graphic mode, it can also be used if an error is made during editing – it is possible to move the cursor back by rotating this knob. However, this can only be done if 'editing' is active which is indicated by the cursor blinking.

## 4.2 Switching on the Unit

After a short press of the power-on button the main display and vario units will turn on and a welcome screen will appear. The first screen shows the boot loader screen followed by the Linux kernel screen and then the file system screen.



The boot procedure normally takes up to 20 seconds but in the case of a firmware update or system check it can take longer. The final boot screen displays information about the system firmware and the IGC serial number. When the boot procedure is completed the profile selection dialogue is shown. Please refer to Section 6.2 for more details about starting up the system.

## 4.3 User Input

The main display unit user interface consists of many dialogues which have different input controls. They are designed to make input of names, parameters, etc. as easy as possible. Input controls can be summarized as:

- Text editor
- Masked text editor
- Spin controls
- Selection control
- Checkboxes
- Colour selector
- Line width selector

To move the function from one control to another, rotate the PAGE selector knob (page selector) as follows:

- Clockwise rotation will select the next control.
- Counter-clockwise rotation will select the previous control. Press the SELECT button (usually lower-right) to enter control input.

### 4.3.1 Text Edit Control

The Text Editor is used to input an alphanumeric string of arbitrary length; the picture below shows typical options when editing text. Use the bottom-right knob to change the value at the current cursor position.

Press the **CHAR>>** button to advance the cursor to the next position. The cursor can also be moved to next position using the bottom-left knob. Rotate it clockwise to move forward.

The **Abc** button is a toggle button and will change the letter case. Press it to toggle modes.

- **Abc** mode will start every new word with a capital letter; subsequent letters will be lower case.
- **ABC** mode will enter only upper-case letters.
- **abc** mode will enter only lower-case letters.

Pressing the **DELETE** button will delete the character at the current cursor position. Continually press the **DELETE** button to delete all characters after the current cursor position.

Press **OK** to confirm the changes and leave control. Press **CANCEL** to abandon the changes and revert back to the values before entering this screen.

### 4.3.2 Masked Text Edit Control

The masked editor is a similar control to the text editor but only limited characters can be entered at any particular position. It is designed to enter latitude, longitude and passwords.

### 4.3.3 Spin Control

Spin controls are designed for numeric parameters. Rotate the bottom-right knob (page selector) to increase/decrease the selected value. The bottom-left (zoom) knob will increase/decrease the value with a different step compared to the page selector.

Flight Recorder

Interval  
12sec

CN Reg.Nr.  
EJ S5-3118

Pilot first name Surname Weight  
Erazem Polutnik 94kg

Copilot first name Copilot surname Weight  
---kg

☒ log other aircrafts data

CANCEL OK

### 4.3.4 Selection Control

Selection boxes, also known as combo boxes on the Windows operating system, are used to select a value from list of predefined values. Use the page selector to scroll through the list.

### 4.3.5 Checkbox and Checkbox List

A checkbox enables or disables a particular parameter. Press **SELECT** to toggle the value. If an option is enabled a check mark will be shown, otherwise an empty rectangle will be displayed.

Voice

Volume Mixer  
100% 50%

Messages

- ☒ Select pilot
- ☒ Set elevation
- ☒ Approaching to final glide
- ☒ Final glide established
- ☒ Two minutes
- ☒ Approaching to airspace
- ☒ Airspace collision
- ☒ Warning altitude
- ☒ Task started
- ☒ Inside zone
- ☒ Outside zone
- ☒ Changing to next point
- ☒ Event pressed

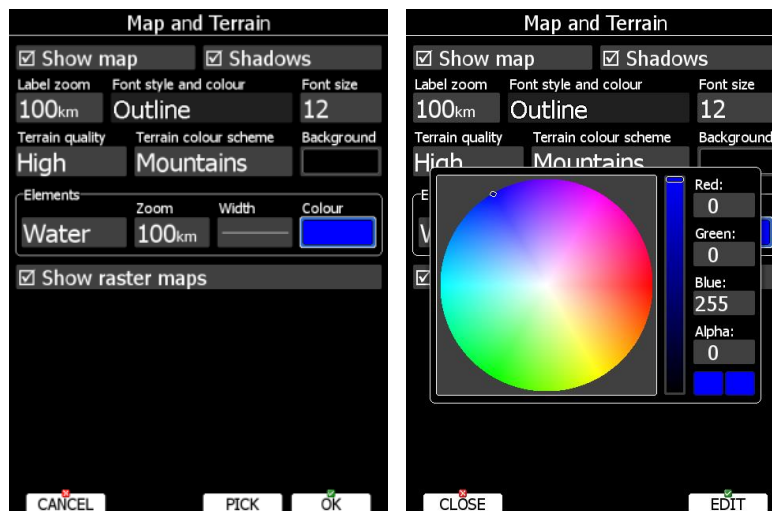
CLOSE NONE SELECT

Use page selector to scroll through the checkbox list. Press the **ALL** to enable all options.

### 4.3.6 Colour Selector

Colours and fills are set via the colour selector control. Rotate the page selector to change a colour.



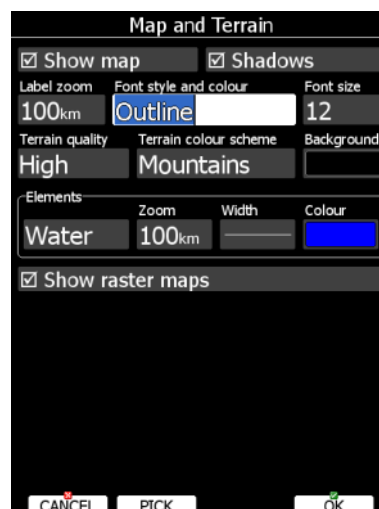


Rotating the zoom selector changes the colour transparency. Transparency is very important for fill colours which are used for airspace zones, observation zones and FAI area. If a fill colour is not transparent (0%), any other map items will not be seen through it. If a fill colour is 100% only the solid border will be drawn.

Press the PICK button to define a colour more precisely. A colour dialogue will open, where you can select a colour from the HSV circle or enter values for red, green and blue colour.

#### 4.3.7 Font Selector

Using the font selector, it is possible to define a font colour and style for a selected item.



Turn the PAGE selector knob (page-selector) to change the font style. Text is also rendered in the selected font style. Turn the ZOOM selector knob (zoom-selector) to change the font colour.

Press the PICK button to define colour more precisely. A colour dialog will open, where you can select a colour from the HSV circle or enter values for red, green and blue.

#### 4.3.8 Line Pattern Selector

Using the line pattern selector, it is possible to define width and pattern of a line. Turn the PAGE selector knob (page-selector) to change the width of line. Turn the ZOOM selector knob (zoom-selector) to change the line pattern. Results are immediately visible on the selected item.

### 4.3.9 Pull Down Menu



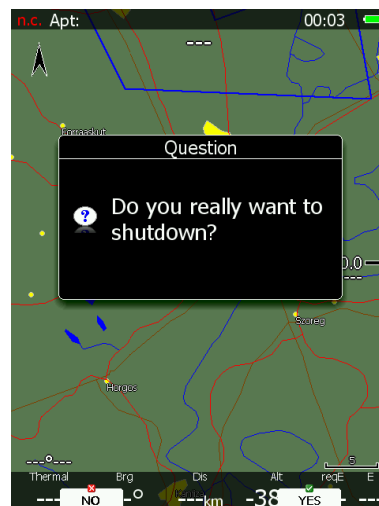
A pull-down menu is used to select one of the options. Press the button several times to select appropriate item of turn PAGE selector knob. A Pull-down menu will automatically close after a few seconds.

### 4.4 Switching Off

Please use one of the following recommended methods for shutting down the LX90x system:

#### Method 1

Press the button with the **OFF** label which is displayed in navigational modes. See Section 5.5 for more details. A message to confirm shutdown will be shown.



#### Method 2

Press the button with the **OFF** symbol for approximately 4 seconds. The OFF message will be displayed and the instrument will shut down. When the message appears, you must release the power button.



### Method 3

When the button with the **OFF** symbol is pressed for more than 8 seconds the system will perform an unconditional shutdown. This method is recommended only in case that the program hangs, and it is not possible to shutdown with methods 1 or 2.



If you are using method 2 to switch off the system, it is necessary to release the button when you see the shutting down message. If you continue to press the off button the main display unit may shut down by method 3.

If the request for OFF is made during flight the instrument will ask for confirmation so that the system cannot be switched off by mistake.



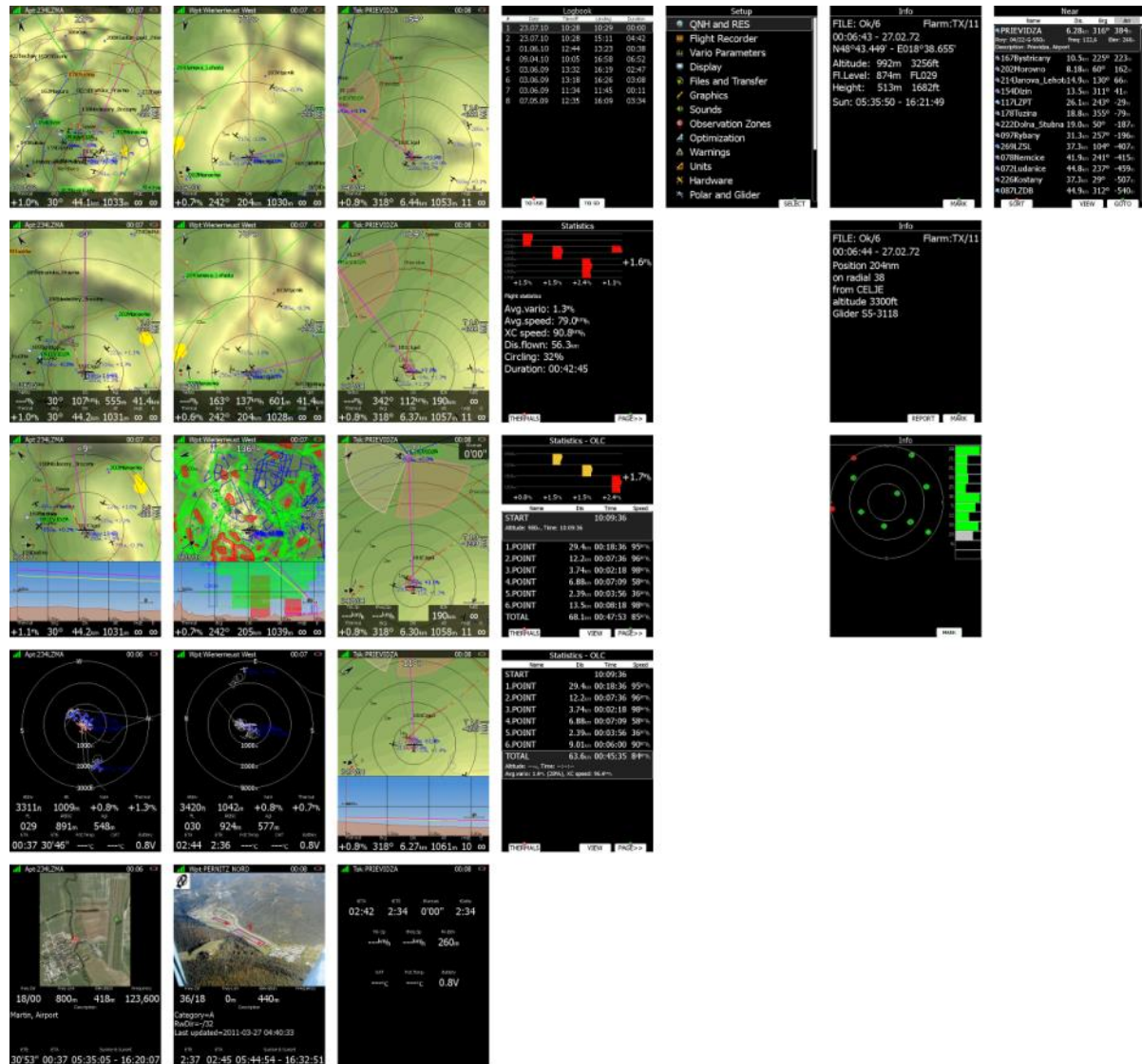
It is important that the main display unit is switched off via software. Never power down the system using the main power switch. The main display unit is running the Linux operating system and sudden power loss may corrupt the file system.



If main power is lost for a few seconds during flight the flight recorder will not produce two flights.

## 5 Operating Modes

The main display unit has seven **modes** or **main menus**. All of them are selectable by rotating the upper-right knob which is also known as the **MODE selector**. The diagram below shows the mode structure of the LX900 running in portrait screen.



- **Navigation Mode**, navigation to and selection of airports.
- **Waypoint Mode**, navigation, selection and editing waypoints.
- **Route Mode**, Navigation, selection and editing routes.
- **Statistics Mode** shows statistical data for flight in progress or the logbook.
- **Setup** mode is used to configure the whole system.
- **Information Mode** displays GPS status, altitude, flight level and height, sunrise and sunset or position report to selectable point or satellite sky view (only if there is no internal FLARM).
- **Near Mode** displays a list of all landable waypoints and airports.

The Navigation modes and statistics mode have additional pages which are accessible by rotating the bottom-right knob also called the **PAGE selector**.

The three main navigational modes **navigation**, **waypoint** and **route/task mode** are selected by rotating the upper-right knob. All three options are similar and have similar basic navigation data screens accessed by rotating the bottom-right knob.



It is possible to fully customize all three main navigational pages using the program LX Styler. This program can be downloaded from our webpage [www.lxnav.com](http://www.lxnav.com).



It is also possible to customize selected navigational pages using the STYLE menu option. Refer to Chapter 6 for more details.

In airport navigation mode the user can navigate only to airports stored in LXNAV's Airports database. This database cannot be edited on the device itself and is available at no charge on our web pages. See Section 5.1.4.2 for more details how to obtain the latest databases.



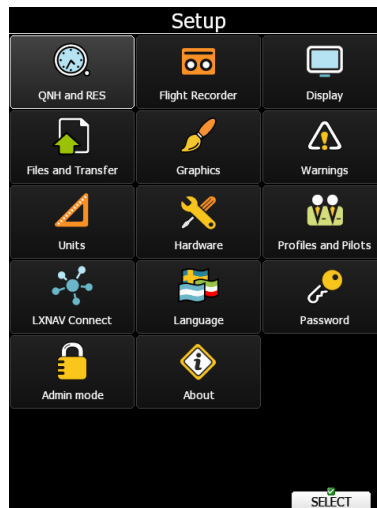
The database can be modified using program LXAsapt editor. This program can be downloaded from our webpage [www.lxnav.com](http://www.lxnav.com)

In waypoint navigation mode the user navigates to waypoints that were previously loaded and selected in the **Files and Transfer** menu (see Section 5.1.4.5).

The Task navigation mode is used for task creation and manipulation. Navigation in this page is exclusively to task points.

## 5.1 Setup Mode

In the setup menu users can configure the main display unit and connected devices. Turn the bottom-right knob - PAGE selector - or press the UP/DOWN arrow on the remote stick to select the appropriate setup item. Turn the bottom-left knob - ZOOM selector - or press the LEFT/RIGHT arrow on the remote stick to move faster over the menu. Press the **SELECT** button or push the middle multi-directional button on the remote stick to enter a menu. A dialogue or sub-menu will open.



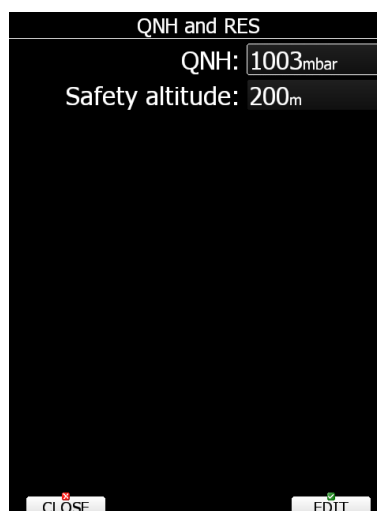
The setup menu is slightly different on the rear seat device as not all options are applicable.



Items which are marked with an asterisk (\*) are available only in the front seat setup menu.

### 5.1.1 QNH and RES

Turn the bottom-right knob to select the required entry field. Press the **EDIT** button and start editing the value.



### 5.1.1.1 QNH\*

Using this feature it is possible to offset the altitude datum which could have changed due to 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 can upset the final glide calculation.

### 5.1.1.2 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 that the glider arrives over the final glide destination at the selected safety altitude. Once the safety altitude has been specified, the pilot has to keep the final glide indicator on 0 to arrive at the safety altitude.

### 5.1.1.3 Magnetic Variation

The main display unit has a built-in Earth magnetic field model. If Auto variation is checked the magnetic variation is derived from this model, otherwise the user can enter a custom value.

## 5.1.2 Flight Recorder

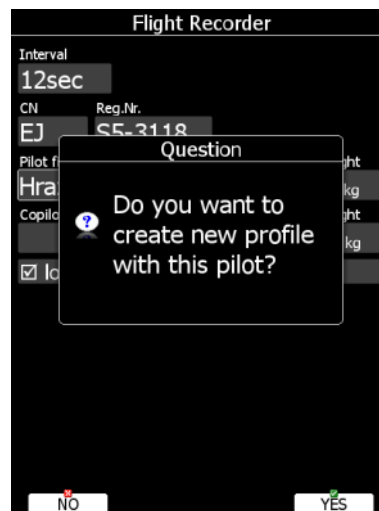
The main display unit has a built-in flight recorder fully approved by the IGC (a sub-committee of the FAI) and will produce secure flight records that are acceptable for all FAI requirements including world records.

Select the recording interval and enter the pilot name. **Pilot weight is important if ballast is specified in kilograms of water** (see Section 5.1.7). If the system is used in two-seat aircraft the name of the co-pilot may also be entered.

**SWAP** button allows you to quickly change the pilot and co-pilot (e.g. when flying in two-seater competitions).



There are very few settings for the flight recorder compared to other instruments. This is because main display unit will record all additional data such as wind, speed and vertical speed by default.

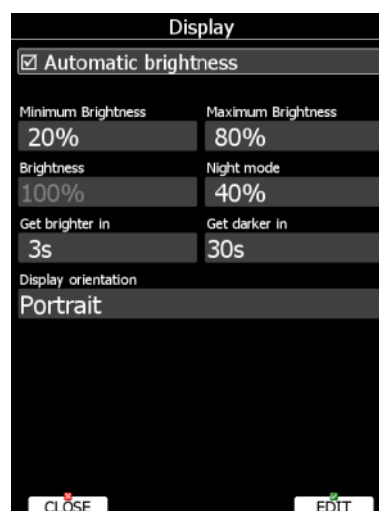


If a new pilot is entered, upon exiting the dialogue the message *"Do you want to create new profile with this pilot?"* will appear. Answer **YES** if you want to quickly add a new profile. For more information about profiles see Section 5.1.9.

The user can also enable options to log other aircraft data (FLARM data) and flap position.

### 5.1.3 Display

The display menu controls screen brightness. The main display unit has an ambient light sensor which detects ambient light and automatically increases or reduces the brightness of the screen.



If the **Automatic brightness** checkbox is selected, the instrument will automatically adjust brightness according to current light conditions.

**Minimum** and **Maximum brightness** items control value limits. Use time values to setup how rapidly adaptation to brighter conditions or darker conditions will occur. Default values are tuned to human eyes and do not require change.

**Night mode brightness** defines maximum brightness when instrument is operating in night mode. In night mode brightness is reduced to very low value to reduce the difference between ambient light and device backlight.

If you want to set the brightness manually uncheck the **Automatic brightness** control and set the brightness manually.

Change **Display orientation** if you want to change the display unit screen orientation. The main display unit will restart with the new screen orientation.



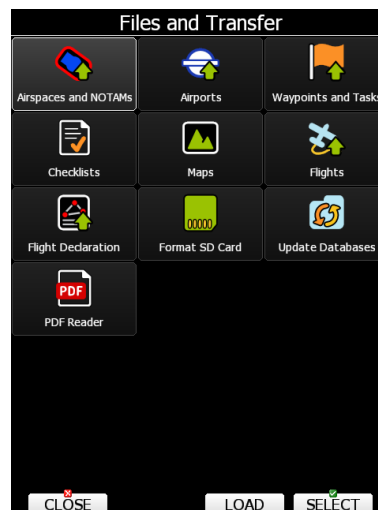
Checking **Auto brightness on vario** while enable automatic regulation of brightness on vario unit, if available. If this option is unchecked the vario unit will always run at full backlight.



It is recommended that the automatic brightness control is always enabled. Reducing brightness will also reduce power consumption. See technical data for more details (Section 2.1.6).

### 5.1.4 Files and Transfers

The Files and Transfer menu is used to manage the waypoint, airspace and airport databases, recorded flights, flight declaration, PDF documents and Checklists.



Within a profile the user can selected different airport databases, airspace and waypoint files. Selected files can be stored inside the main display unit or on an inserted SD card or USB stick.

It is also possible to upload files from SD card or USB stick to main display unit.

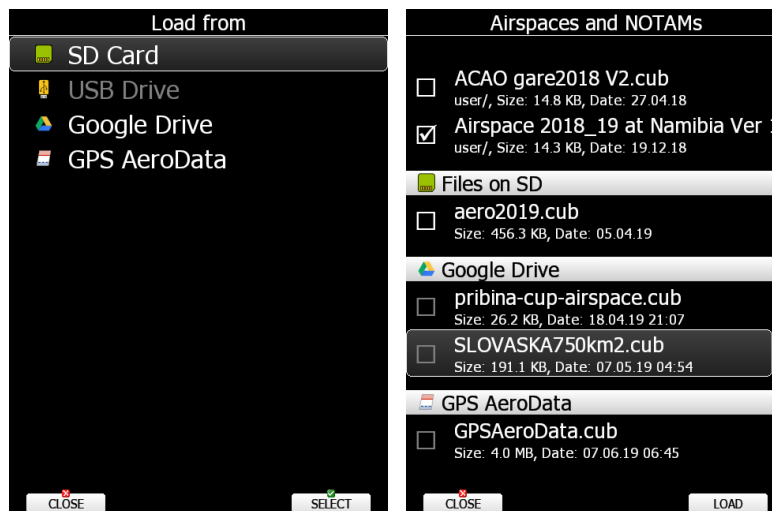
Waypoints, Tasks and Flights can also be uploaded to LXNAV Connect.

#### TO LC function:

After pressing **TO LC** a window with registered storage services will pop up. The user has to select a service or email and press **SEND**.

#### 5.1.4.1 Uploading User Airspace and Waypoints by using LOAD button

Airspace and Waypoints can be loaded from a SD card or USB stick or LXNAV Connect storage services. Select the type of database you wish to load and press the LOAD button.



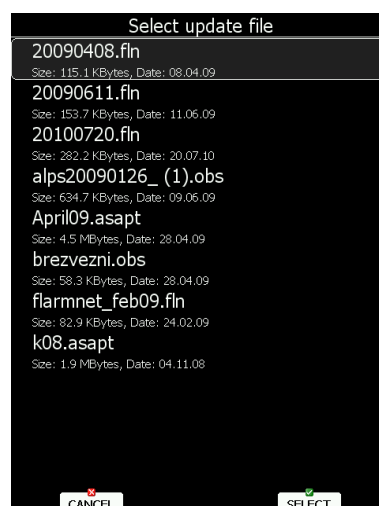
A dialogue with a list of all available files will be opened. Press the **COPY** button to copy the selected file to the main display unit. The main display unit will accept the following file formats:

- **Waypoints file:** SeeYou CUP files, CUPX files (which may include also images) and Cambridge/Win5.1.9 DAT files. When selecting DAT files waypoints will be converted to CUP format which is the format used for internal storage of points. There is no limitation for the number of waypoints in a file and/or name length.
- **Airspace file:** All types of CUB files are accepted.

#### 5.1.4.2 Uploading Airspace and Airports Database (ASAPT)

LXNAV distributes airport and airspace databases for the whole world free of charge. The airport and airspace databases are regularly maintained by LXNAV. The latest version of the databases can be found on our webpage [www.lxnav.com](http://www.lxnav.com).

The database is distributed as single file with **.asapt** extension. Copy this file to a SD Card or USB stick. Plug the SD card or USB stick into the main display unit and select the **Update database** menu item. If multiple ASAPT files are found on a SD card a dialogue to select the appropriate one will be shown.

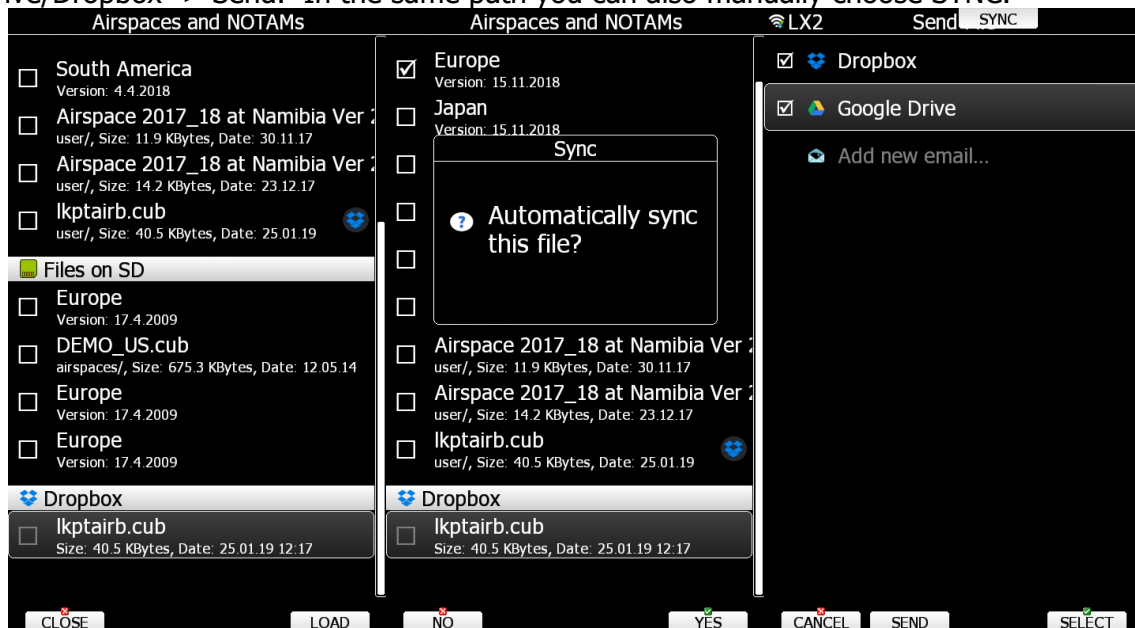


Databases are updated automatically with progress of the update being shown on the screen.

#### 5.1.4.3 Downloading and Uploading via Storage Service

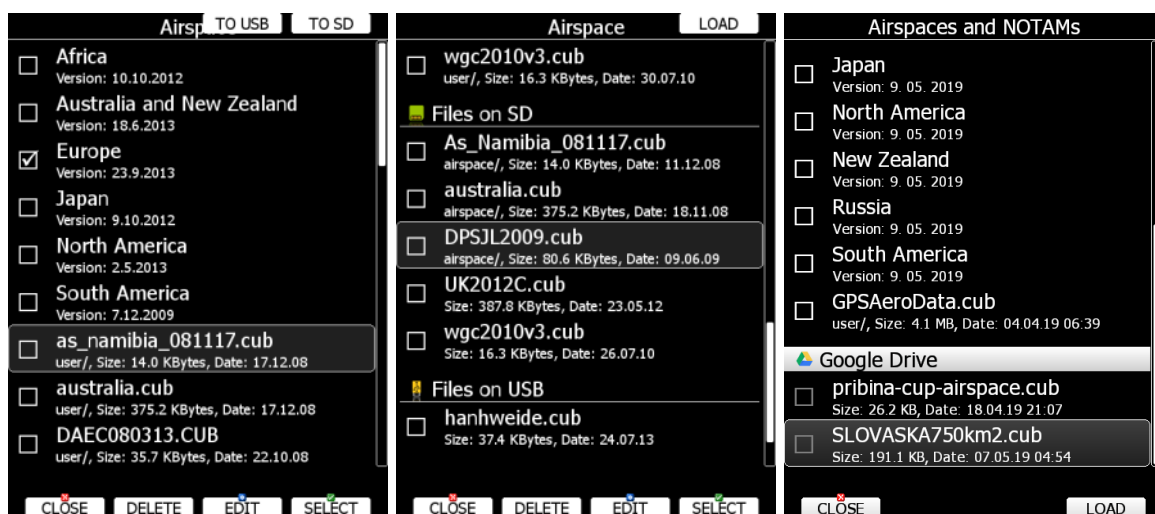
Since Software version 7.0 all files also can be downloaded from storage services (Dropbox/Google Drive). To set up storage service please see Section 5.1.14.2. Any file

that is compatible (for example .cup airspace file) will automatically appear in the destination (for example Files and transfer -> Airspaces and NOTAMs) once it is uploaded to one of the storage services. To download it to the instrument simply press **LOAD**. A pop up question will appear asking you if you wish to enable automatic sync for this file. This enables automatic synchronization of the set file (if you modify/update it in the storage service it will automatically update on your instrument). An icon will appear next to the file if synchronization is enabled. You can also save/upload files to the storage service by selecting file(s) on your instrument and clicking SAVE -> LXNAV Connect -> Google Drive/Dropbox -> Send. In the same path you can also manually choose SYNC.



#### 5.1.4.4 Airspace

Select the **Airspace** menu item and press the **SELECT** button. A list of all available airspace databases/files will be shown on the screen. The distributed airspace databases are shown first followed by user airspace files, followed by airspace files on the SD card and finally airspace files on the USB stick.



Select the required airspace and press **SELECT**. If a check mark is shown in front of an airspace item this airspace file is active and will be shown in the graphics and used for proximity calculation when enabled.

Button labels vary depending on airspace location. For distributed airspace only, buttons **SELECT** and **EDIT** are available. For user airspace files stored on the main display unit buttons **DELETE**, **TO USB** and **TO SD** are added.

To delete an airspace file, select the airspace item and press the **DELETE** button. The delete action must be confirmed. Only user airspace files can be removed.

Press the **TO USB** button to copy selected airspace to the USB stick. Press the **TO SD** button to copy selected airspace to the SD card.

When an airspace file from SD or USB is highlighted the **LOAD** button is displayed. Press the **LOAD** button to upload selected airspace to the main display unit. Loading the airspace does not mean it is enabled. If you wish to enable repeat the **SELECT** procedure as written above.



When an airspace file from USB or SD card is selected, it will be available only if a SD card or USB stick is inserted in main display unit.



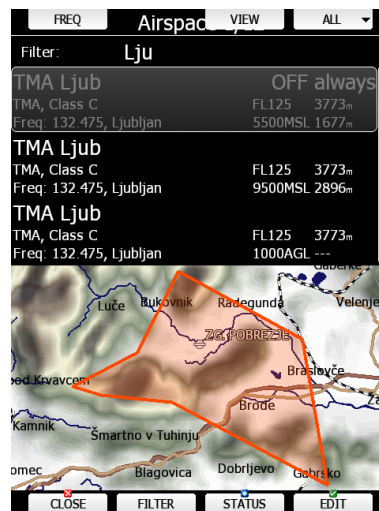
Selecting airspaces on SD card or USB allows you to create portable profiles which can be transferred from one device to another.

#### 5.1.4.4.1 Edit Airspace

An airspace file can be edited. Select an airspace item and press the **EDIT** button. A list of all airspace zones in this database/file will be shown. Use the page selector to scroll through the items one by one or the zoom selector to move up or down for a whole page. At the bottom of the page a map with the selected airspace zone is drawn.



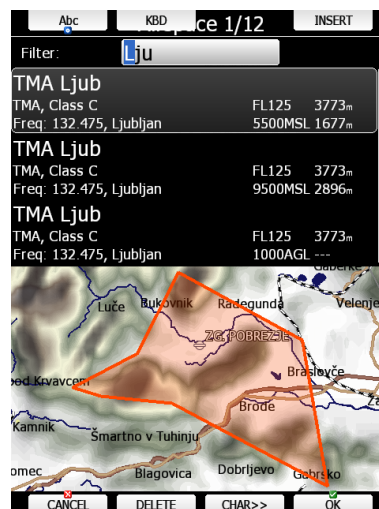
Pressing the **VIEW** button will toggle different views of the zone list.



Using the **STATUS** button, the selected zone can be disabled for proximity warnings. Repeated presses will toggle the following options:

- **OFF always:** proximity warning is switched off all the time.
- **OFF today:** proximity warning is switched off for today only.
- **OFF hh:mm:** proximity warning is switched off for 10 minutes.
- If **no label** is shown airspace is enabled for proximity warnings.

**FREQ** button will automatically set the frequency on the radio (if radio bridge is connected).



For easier sorting use the **FILTER** button.

Pressing the ALL option will disable all airspaces for TODAY or ALWAYS. To enable them again press ALL and choose ENABLE.

**Airspace Edit**

Name  
Aviano CTR

Type  
Control zone

Class  
Class E

Upper limit  
195 FL

Lower limit  
1 m AGL

CLOSE EDIT

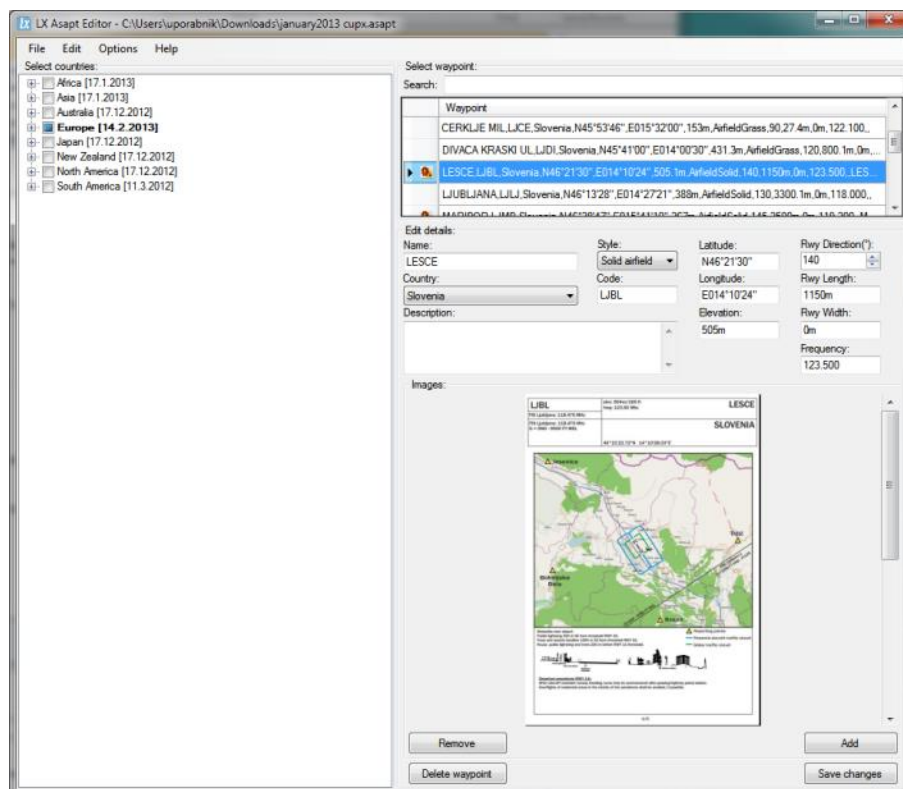
Press EDIT to edit data for the selected zone. Airspace type, class and altitude borders can be modified in this dialogue.

#### 5.1.4.5 Airports

Select the **Airports** menu item and press the **SELECT** button. A list of all available airport databases will be shown. Only distributed airport databases are shown in this menu; the user cannot modify contents of a database within the main display unit. If an error is suspected in our database, please notify us via email [info@lxnav.com](mailto:info@lxnav.com).

If you wish to add additional airports to the system an ordinary waypoint file should be created and uploaded as a waypoint file or use the LXAsapt editor program to modify the airport database.

##### 5.1.4.5.1 Managing Airports Using the LX Asapt Editor



The LX Asapt Editor allows you to edit any LXNAV airport database distributed as .asapt files. You can quickly filter the regions and find the airports you are interested in. View and

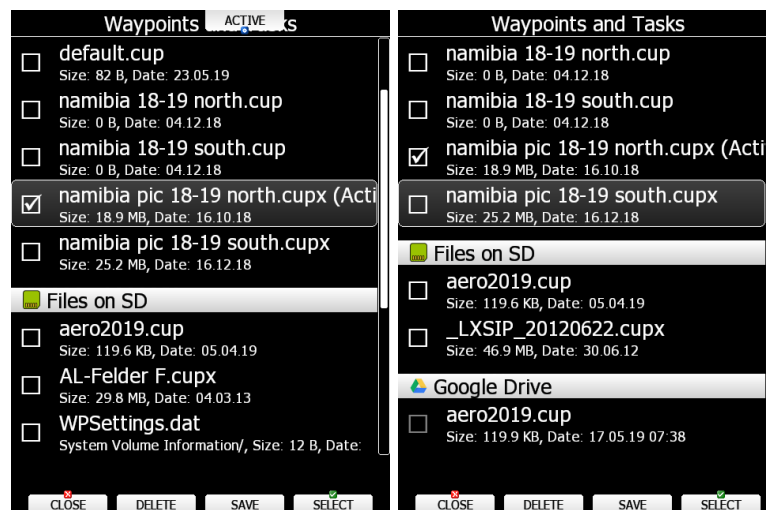
edit all details of the airports, add charts, photos (from files or clipboard) and any other information you would like to have associated with them. You can also delete the regions you are not interested in and add new or missing airports anywhere in the world (for supported regions). The application also monitors every change you make to the database, so you can simply apply changes to a new database when it is released by LXNAV.

Modified airport data can be readily exported to the system as a (.aspt) file and imported to the main display unit using the standard procedure for database updates (see Section 5.1.4.2).

The original database can be restored only via the update database procedure using the original database file. All databases are published on [www.lxnav.com](http://www.lxnav.com).

#### 5.1.4.6 Waypoints and Tasks

Select the **Waypoints and Tasks** menu item and press the **SELECT** button. A list of all available waypoint files will be shown on the screen.



Multiple files can be selected. All checked files will be shown on the graphics page and used in the near mode calculation if the waypoint is of the proper type (airport or out landing place). However, only one file can be the active file. The active file is used for task creation. Task can be loaded only from the active file.



When a waypoint file from a USB or SD card is selected, it will be available only if a SD card or USB stick is inserted in the main display unit.



Selecting waypoint files on a SD card or USB stick allows you to create portable profiles which can be transferred from one device to another.

Press the **ACTIVE** button to mark the selected file as active.

Press the **DELETE** button to remove the selected file from the internal storage of the main display unit.

If waypoint files from the SD or USB are selectable, the **LOAD** button is visible. Press the **LOAD** button to upload the selected waypoint file to internal storage.

If a waypoint file from internal storage is selected the **SAVE** button is visible. Press the **SAVE** button to save waypoints to the SD Card or USB stick or to LXNAV Connect. If there is no SD Card or USB a button **TO LC** will be visible. Use this button to save your files to LXNAV Connect.





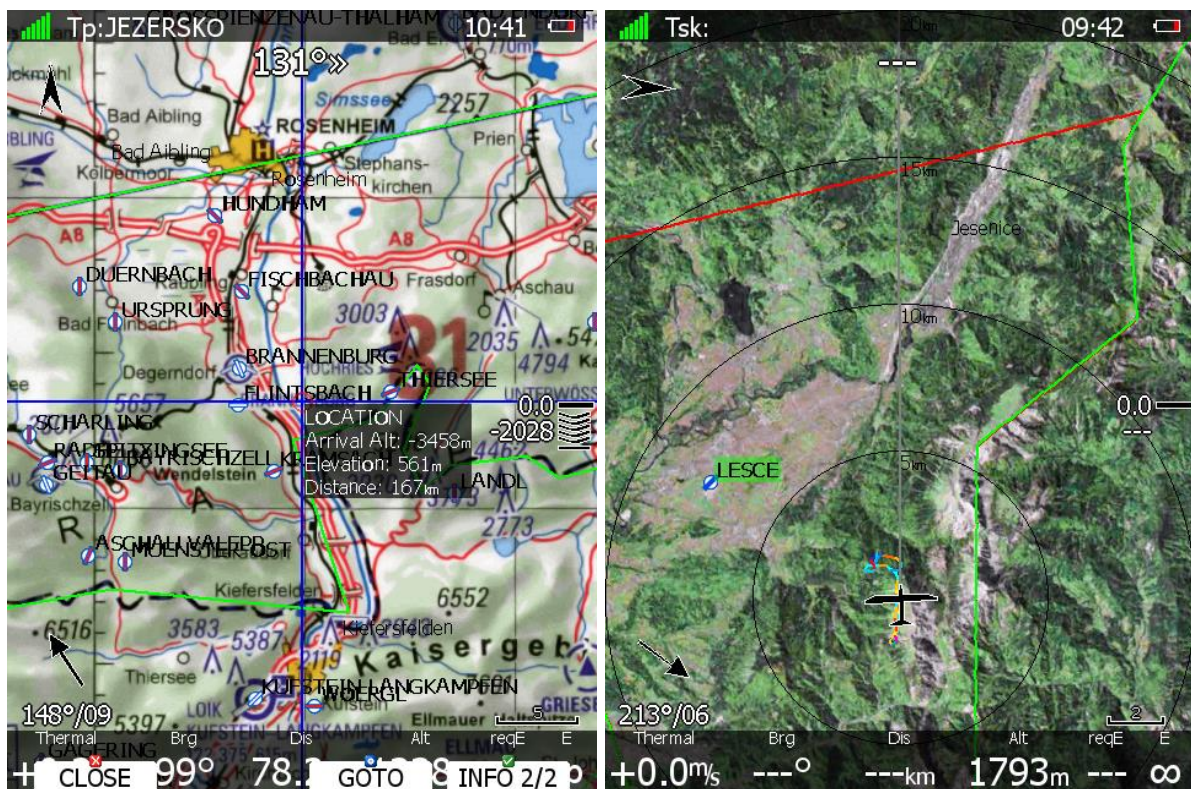
CUP and CUPX files also store tasks. Tasks will also be uploaded to the main display unit. This feature is very useful if you wish to prepare tasks on a computer using SeeYou or a similar program. You can subsequently easily select a task via the Task->Edit->Load option. See Section 5.7.4 for more details.



Some CUPX waypoint files with images are password protected and a valid password must be obtained before using such a file. Please contact the vendor to obtain a password for your display unit.

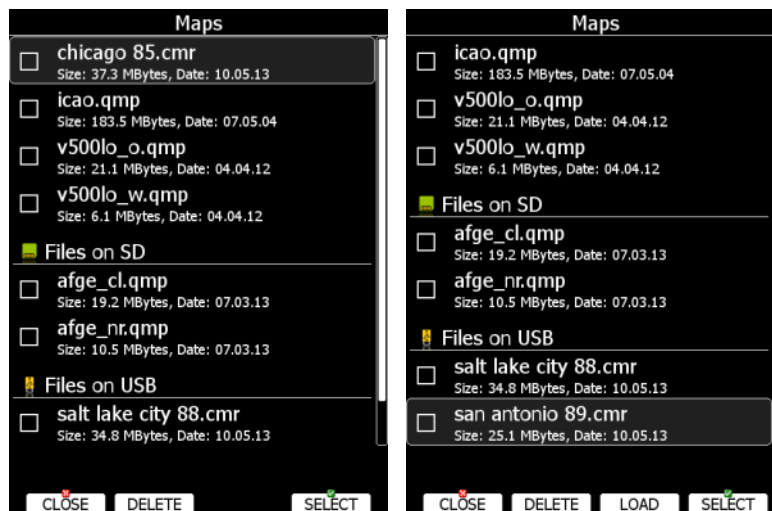
### 5.1.4.7 Maps

The main display unit is preloaded with terrain and vector map data for the entire planet Earth. However, it is also possible to use scanned (rasterized) maps as background for the navigational screen. The next two images show examples of scanned ICAO map and satellite imagery.



The system is supporting two file formats: CMR file format provided by SeeYou software from Naviter. There are available free of charge sectional maps of USA ([www.soaringdata.info](http://www.soaringdata.info)) and QMP file format provided by Ifos. Please contact Ifos ([www.ifos.de](http://www.ifos.de)) or ([www.strepla.de](http://www.strepla.de)) to purchase scanned maps.





Select the **Maps** menu item and press the **SELECT** button. A list of all available map files will be shown on the screen.

Multiple files can be selected. All checked files will be shown on the navigational page depending on the raster map setting.

Press the **DELETE** button to remove a selected map. Press the **LOAD** button to upload a selected map to internal memory.



When a map file from USB stick or SD card is selected, it will be available only if a SD card or USB stick is inserted in the main display unit.



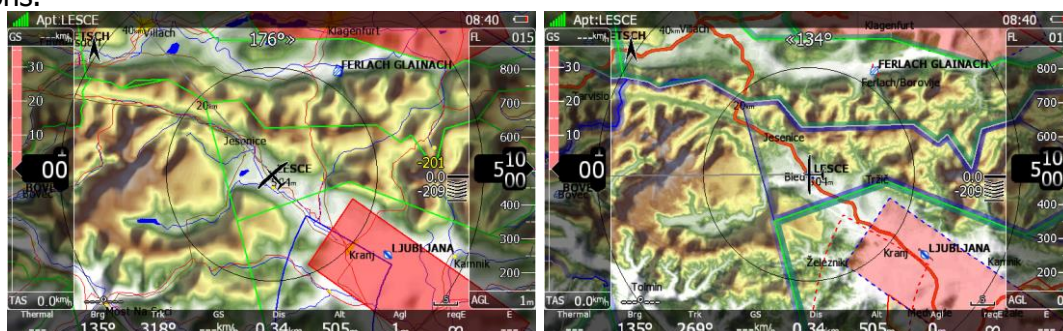
QMP maps are generated by IFOS and will work only on a system where the serial number is the same as the registered serial number on the QMP map. If serial number does not match, the map cannot be displayed.



Map files can be very large and thus occupy a lot of internal storage space within the main display unit. Selecting maps directly from a SD card or USB stick allows you to save space at no performance cost and create portable profiles which can be transferred from one device to another.

#### 5.1.4.7.1 HGL – High Resolution Elevation Data

HGL – high resolution elevation data is an add-on package which does not come preinstalled on the device. It provides high resolution elevation data for better view of terrain as shown on the images below. HGL packages require a lot of space so we limit them to only selected regions.



Left: terrain rendered using normal maps; right: terrain rendered using HGL.

#### 5.1.4.7.1.1 HGL-Install Procedure

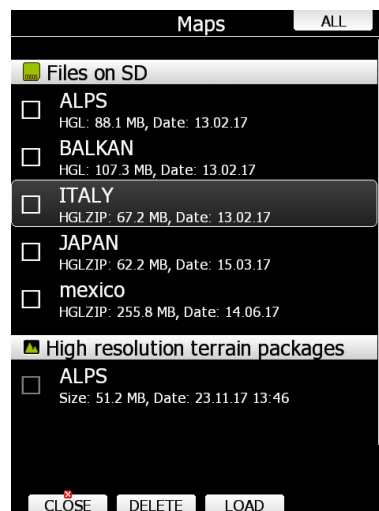
HGL terrain can be downloaded from [www.lxnav.com](http://www.lxnav.com). After downloading a selected HGL package you can install it via Setup->Password->insert 89891. The package will be unpacked into internal memory and available for selection in the Maps dialogue.



Alternatively, if you are low on internal space, you can rename the “.hglzip” extension of the package to “.zip” and extract it into a folder on a SD/USB. After inserting such SD/USB into the device your package will be immediately available for selection in Maps dialogue and will not require loading the data onto internal memory. **WARNING:** When using this option, you **MUST NEVER** remove the SD/USB before turning the device OFF.

## Install via LXNAV Connect

High resolution terrain maps can be installed directly via the Wi-Fi module. You need to register your device on LXNAV Connect and add the High resolution terrain packages service. A menu with available maps will appear under: Setup->Files and transfer->Maps.

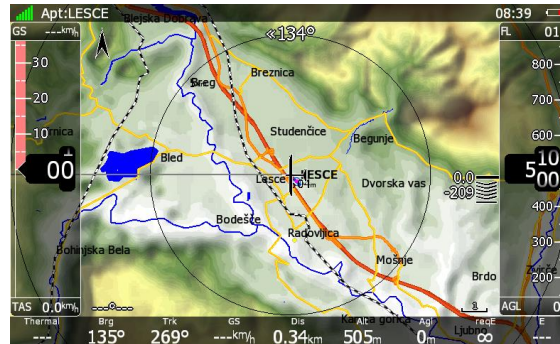


#### 5.1.4.7.2 Maps CITv1/CITv2

CITv1: Regular maps containing vector and elevation data. Preinstalled on all devices.



CITv2: New maps containing vector and elevation data. Supported by firmware version >5.06 and preinstalled on devices produced from 2014 onwards.



Depending on when your device was manufactured it may already contain the new maps (CITv2). Installed maps can be seen in "SETUP-ABOUT" dialogue (after installing version 6.0+).

You will see "Installed maps: CITv1, CITv2 (used)" if you have newer maps installed. If not then it will state "CITv1 (used)".

#### 5.1.4.7.2.1 CITv2-Installation Procedure

If CITv2 is not preinstalled then you will need to verify that enough free space is available on your device before installing CITv2 maps.

Installation on your device is as follows:

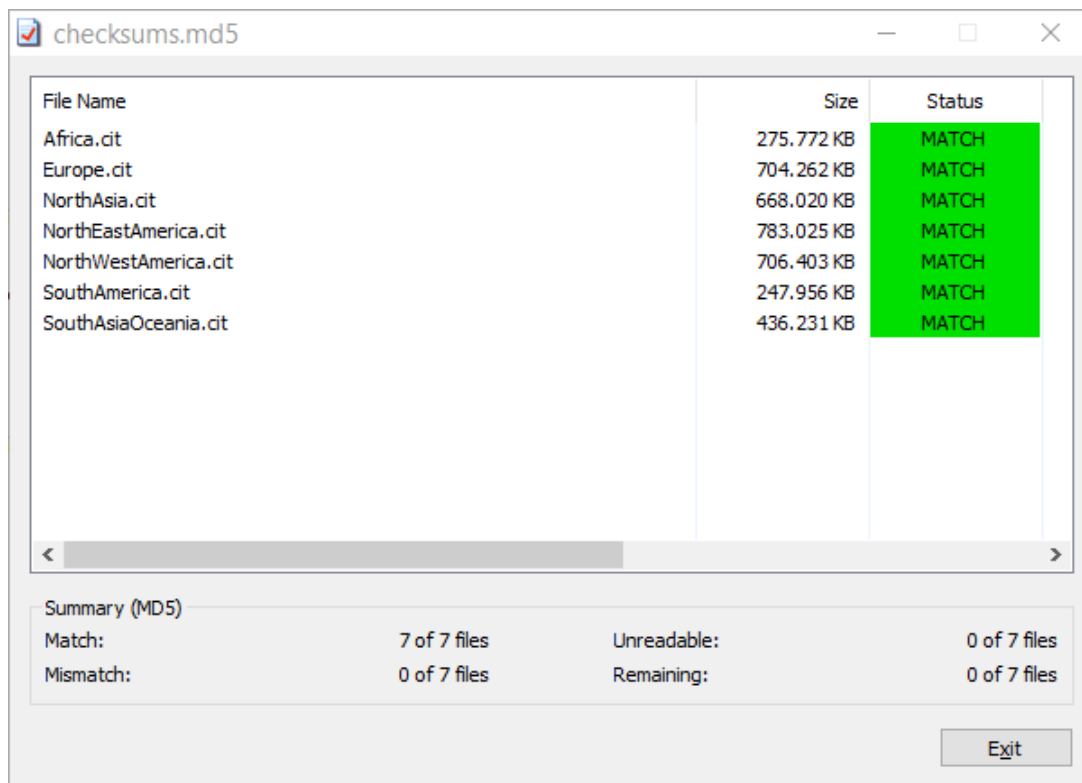
1. Verify that you have enough available free space on internal memory by going to Setup->Password and entering 00111. Verify that "FreeMem CF" value displayed is at least 3.8 GBytes.

2. Download CIT files from:

<https://my.pcloud.com/publink/show?code=kZiiy0ZzEanvinK8pQ0dYferQPHo4Htxu7V>

These files will also be automatically verified whilst being copied to your device. To prevent discovering a faulty download "on site" you can (optionally) verify downloaded files on your PC using a tool like HashCheck <http://code.kliu.org/hashcheck/>

After installing HashCheck you can double click on the checksums.md5 file to automatically trigger verification of downloaded CIT files.



Verification of Downloaded Files with the HashCheck Tool

3. Copy the downloaded CIT files to USB or SD and use "Safely remove hardware or eject media" (**very important!**) before removing the SD or USB from the PC. This step prevents accidental removal of the media before files are fully written to it. Removal while files are being written would result in corrupted files on the media.

4. Install the latest version of the firmware on your device.

5. With the SD/USB containing CIT files inserted into your device go to Setup->Password and enter 00112. You will now be asked "Map (CIT) file(s) have been detected on external media. Would you like to copy them to internal memory?" Press "Yes".

The copy procedure will begin and the maps will be copied to internal memory. You will see an estimation of time to finish (ETA) on your device. It may take up to an hour, so prepare accordingly (sufficient battery, time).

After copying it should state "OK" for all copied files. If it does not then it is likely that you have a faulty CIT file on the external SD/USB media (return to step 3 or 2, if you suspect a faulty download).

After exiting this dialogue, the device will automatically restart and when it starts again you can verify installed and used maps via the "About" dialogue.



If you do not have enough space available and you wish to have the CITv2 maps, you should contact LXNAV about a HW/memory upgrade.

### 5.1.4.8 Flights

Select the **Flights** menu item and press the **SELECT** button. A list of all stored flights will be shown. The main display unit is capable of storing more than 1000 hours of flight logs.

Flights 1/60				
#	Date	Takeoff	Landing	Duration
1	14.08.13	12:49	18:24	05:35
2	03.05.13	04:48	16:37	11:48
3	03.05.13	04:48	08:45	03:56
4	07.10.12	08:44	16:19	07:34
5	06.10.12	08:14	10:29	02:14
6	05.10.12	09:11	11:51	02:40
7	03.10.12	05:49	09:05	03:16
8	19.06.12	10:26	18:56	08:30
9	11.06.12	10:23	16:00	05:37
10	12.05.12	12:09	16:29	04:20
11	24.04.12	08:42	14:24	05:42
12	20.04.12	11:48	14:24	02:36
13	20.04.12	09:48	15:42	05:54
14	20.04.12	09:48	12:23	02:35
15	05.04.12	07:54	14:33	06:38

If a SD card or USB stick is inserted into the main display unit, flights can be copied to it when the corresponded button is pressed. Flights can be removed from the main display unit using the **DELETE** button. Press the **TO MAIL** button to send selected flight an email address.

If the Wi-Fi option is enabled, buttons **TO OLC** and **TO MAIL** will be visible. Press the corresponding button to send selected file to email or to the OLC.

#### 5.1.4.8.1 OLC Upload

**TO OLC** automatically uploads the flight file to OLC. This function is supported also on the Logbook page. The first-time user must register his account parameters on the LXNAV Connect web service. Read more in Section: 5.4.1.1.

Because of restrictions imposed by the OLC team we are no longer able to support direct claim functionality.



For details on how to claim the flight to OLC, please contact OLC team at [mail@onlinecontest.org](mailto:mail@onlinecontest.org).

Should these restrictions ever be lifted, we would be happy to resume the OLC upload & claim service.

#### SeeYou Cloud Upload:

Upload to SeeYou cloud is automatically performed. The user must insert their SeeYou cloud KEY. This can be done via: SETUP->PROFILES AND PILOTS->select profile->press EDIT.

### 5.1.4.9 Flight Declaration

In this menu point the pilot can check the current declaration settings (Pilot, Glider and Task declared). The flight declaration can be SAVED and also LOADED (.hdr file). See also Section 5.1.13 on how to obtain a SeeYou key.

#### **5.1.4.10 Formatting a SD Card**

Use this option if the main display unit cannot read a SD card. The system uses the same card format as used by the MS-Windows operating system (FAT). However sometimes Windows does not format the SD card properly or a new card may not be formatted properly. It is recommended to format new SD cards via the unit before using them.



Formatting a SD Card will erase the entire contents of the SD card.

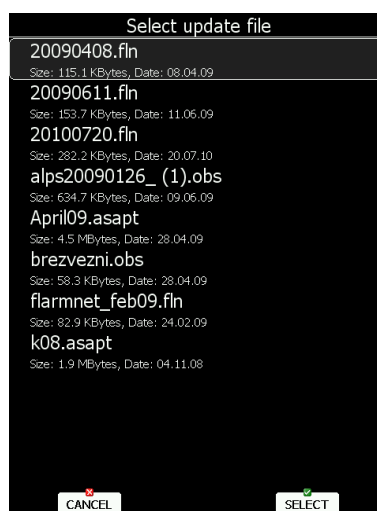
### 5.1.4.11 Update Databases

Under this section you can upload databases such as:

- .asapt extension (airspace and airport database file provided by LXNAV)
- .fln (FlarmNet file)
- .obs (FLARM obstacle file)

LXNAV distributes free of charge airport and airspace database throughout the whole world. The airport and airspace database are regularly maintained by LXNAV. The latest version of the database can be found on our webpage [www.lxnav.com](http://www.lxnav.com).

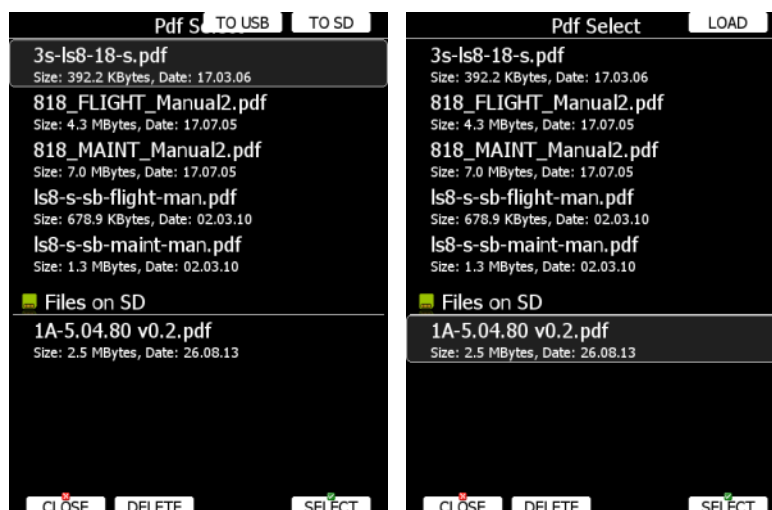
The database is distributed as single file with **.asapt** extension. Copy this file to a SD Card or USB stick. Plug the SD card or USB stick into the main display unit and select the **Update database** menu item. If multiple .asapt files are found on a SD card a dialogue window to select the appropriate one will appear.



Databases are updated automatically and the progress of the update will be shown on the screen.

### 5.1.4.12 PDF Documents

The main display unit can store an almost unlimited number of PDF documents. Here the user can store flight manuals, maintenance manuals, scans of any gliding document and checklists.



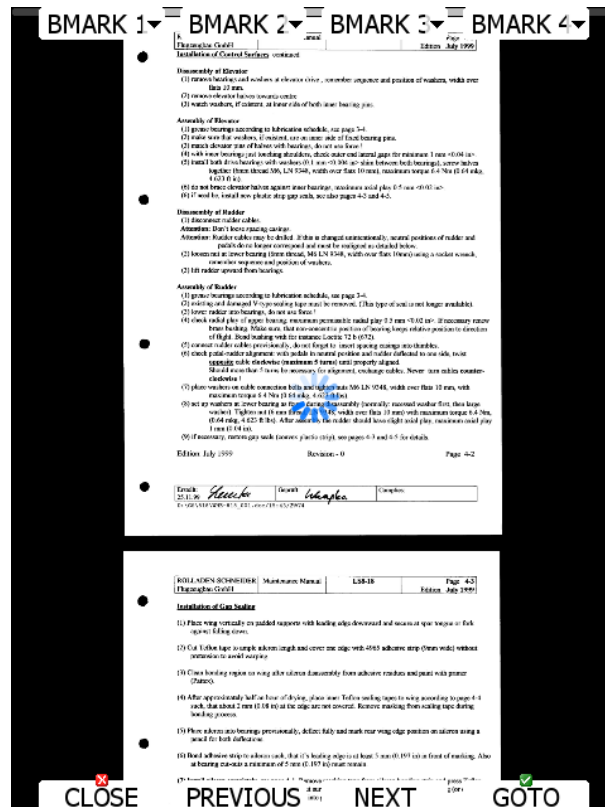


Select the **PDF READER** menu item and press the **SELECT** button. A list of all available PDF documents will be shown on the screen. Select the desired document using the **PAGE** selector. Press the **DELETE** button to delete the selected document. Press the **LOAD** button to upload a selected document into internal memory.



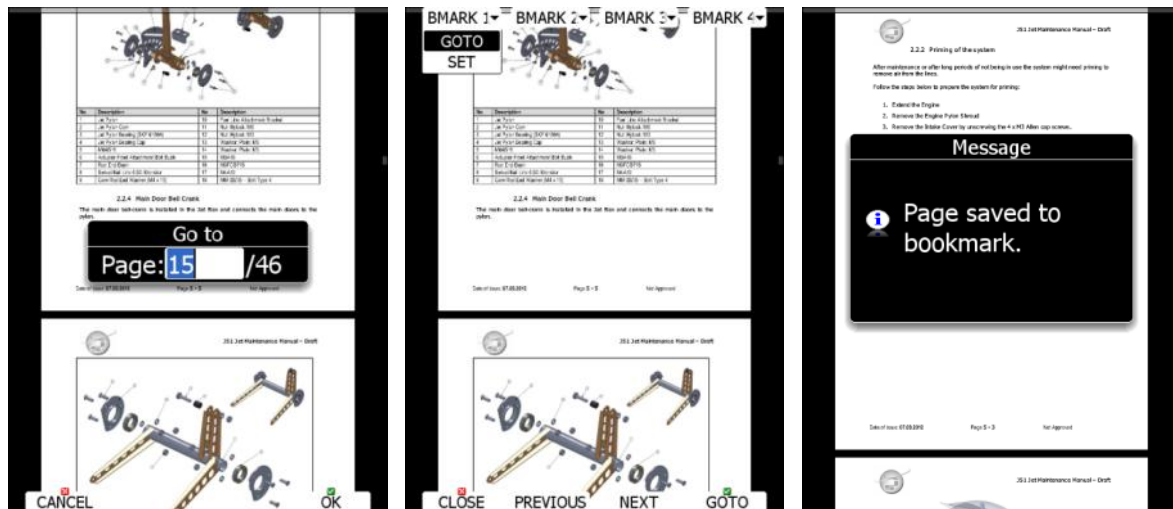
Documents can be very large and thus occupy a lot of internal storage space within the main display unit. It is not necessary to copy documents to internal memory. Documents can be selected directly from a SD card or USB at no performance cost.

Press **SELECT** button again to open selected document.



A document will load within a few seconds. Use the **PAGE** selector or the **NEXT** and **PREVIOUS** button to move up/down through the document. Use the **ZOOM** selector to zoom within the current page. Use the **MODE** selector to move left/right within the selected page. Press the **GOTO** button to navigate to specific page. A goto dialogue will open. Use the **PAGE** or **ZOOM** selector to select the desired page

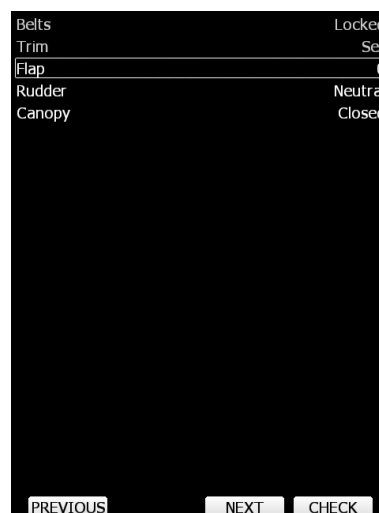




It is also possible to set four independent bookmarks. Press **BMARK1** to open the bookmark drop down menu. Press the **BMARK1** button once more to set a bookmark. A message will confirm that bookmark has been saved.

### 5.1.4.13 Checklists

Use this dialogue to load a checklist, delete checklists, save checklists or edit an existing checklist file. The active checklist file is the profile which is currently being used. Select a checklist file using the PAGE selector knob. Press SAVE where you will have an option **TO USB** or **TO SD** for the checklists file to be stored on a USB stick or SD card. A file is stored in a file with the **.checklists** extension. Press the **LOAD** button to load a file from an SD card or USB stick. A profile will be copied to the main display internal storage. Press the **EDIT** button to edit the checklist's file name.



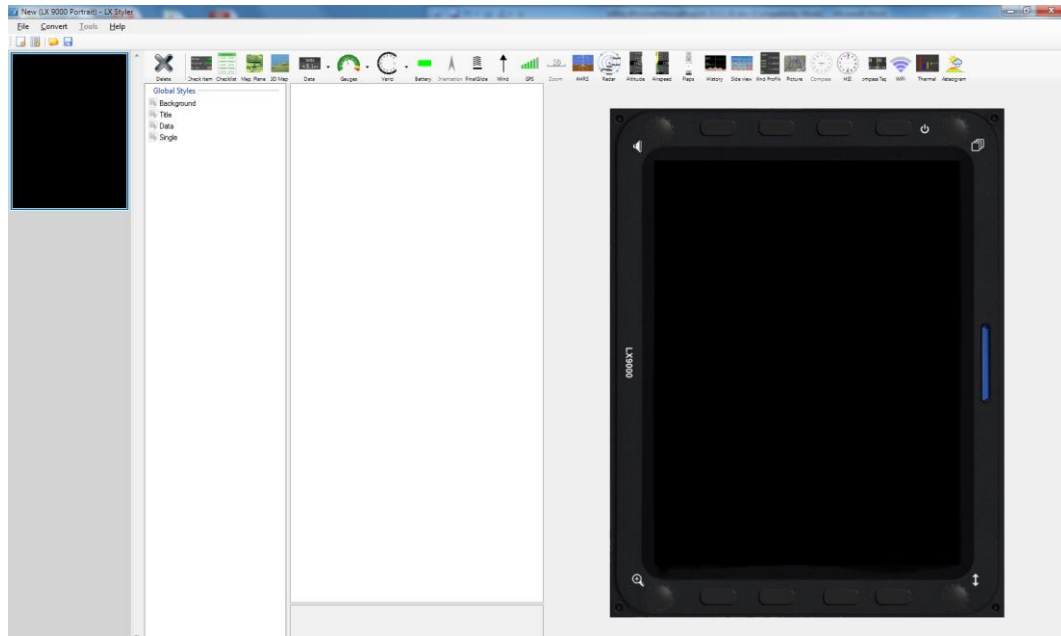
Checklists can be found on the last page of APT/WPT and TSK page. Once the action of the checklist is performed press the **CHECK** button. To move through the actions on the checklist use the **NEXT** or **PREVIOUS** buttons.



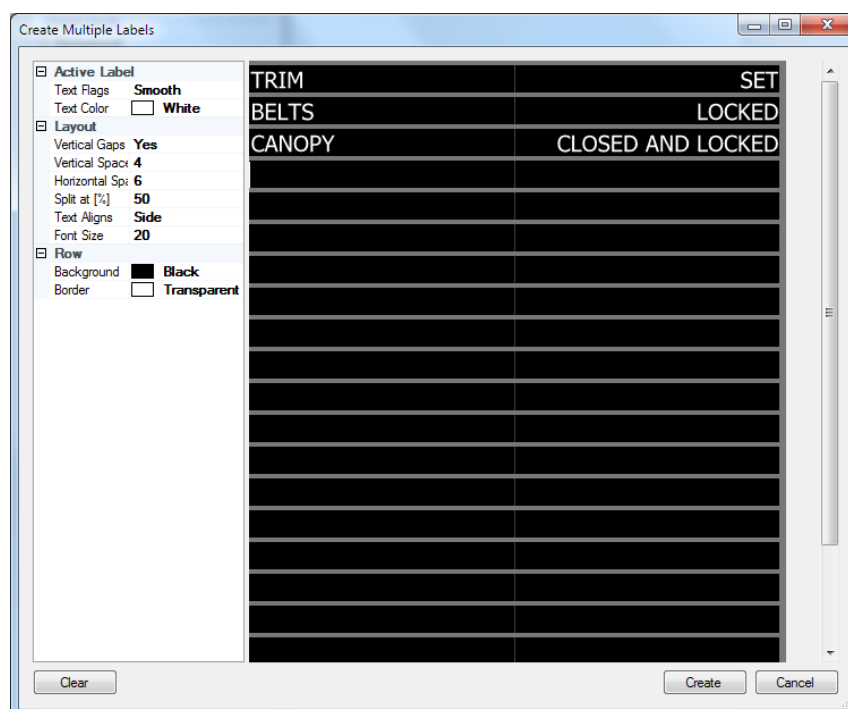
A checklist file can be created / opened and manipulated with the LX Styler program. LX Styler is a special program designed for customizing layout of navigational pages. It can be downloaded free of charge from our web page [www.lxnav.com](http://www.lxnav.com). For more information about LX Styler please refer to the LX Styler manual.

## Creating a checklist file

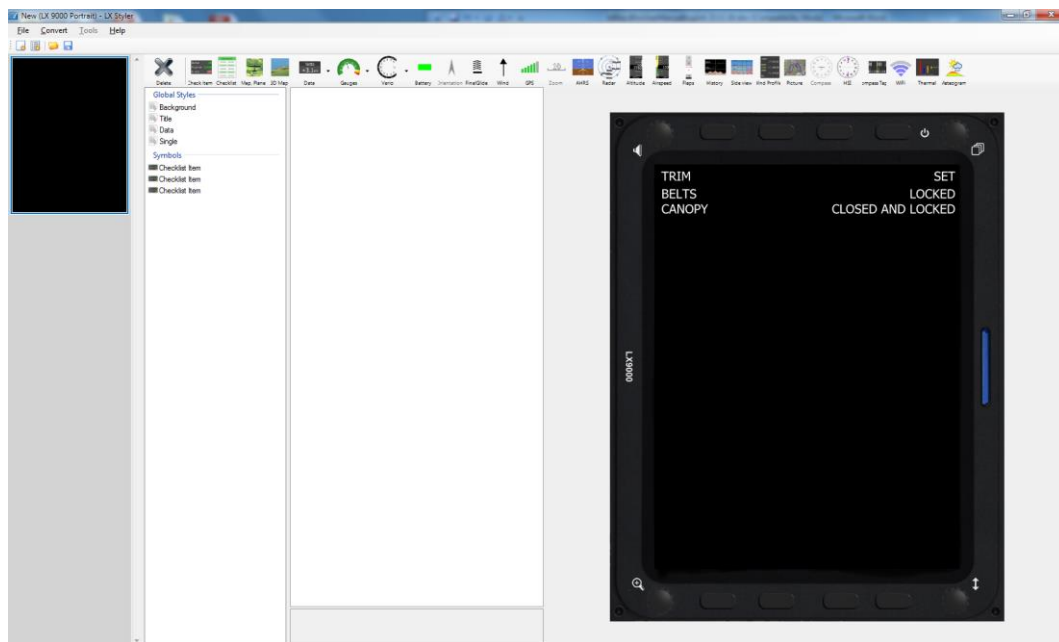
- Open the latest version of LX Styler.
- Click on FILE->NEW CHECKLISTS.
- Select your instrument size and orientation.
- Double click on the blank black page which will open the customization menu.



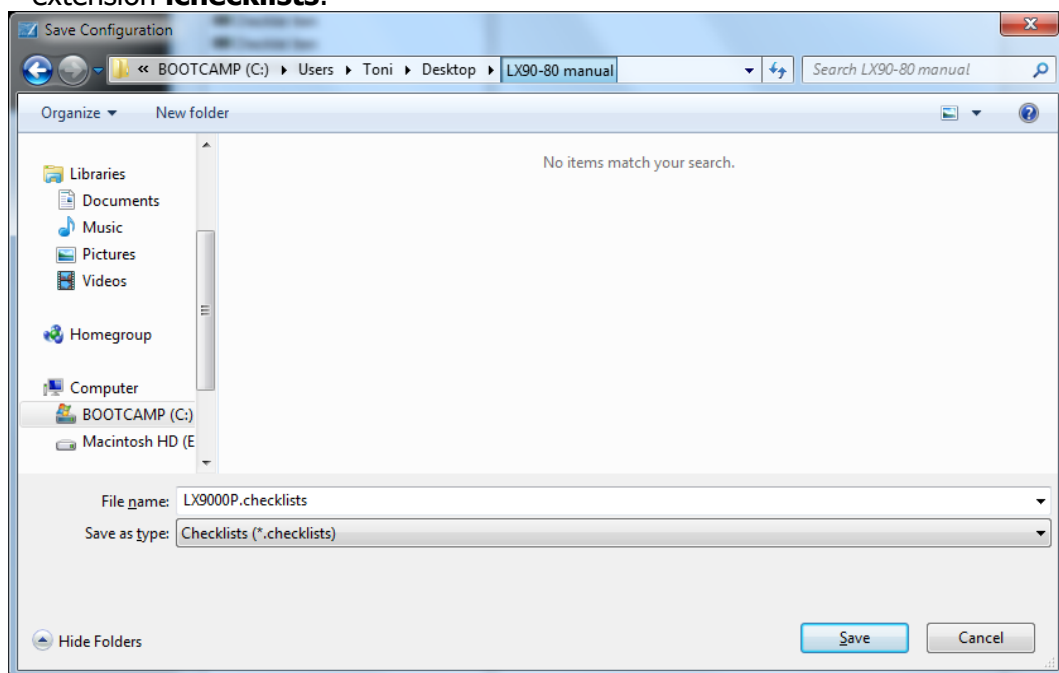
- Click on the Checklist icon.
- A new window **create multiple labels** will open.
- Now you can set gaps, vertical and horizontal space and text alignments.
- Put the text into the table left and right.



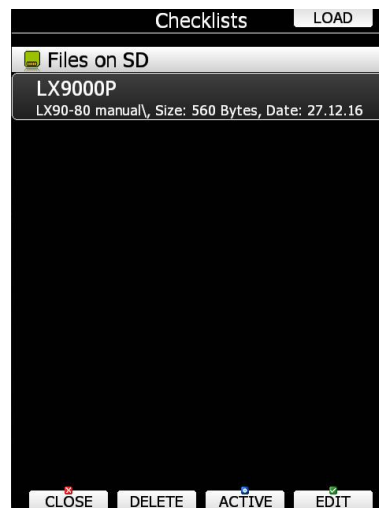
- Once finished press the **create** button.



- Press **save** to save the checklist file on the PC/SD card or USB. The file has the extension **.checklists**.



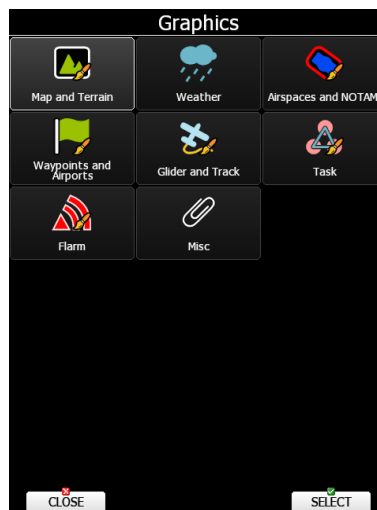
- Go to the LXxxxx instrument Files and Transfer ->Checklists and load the file from the SD card/USB stick.



- The checklist is automatically added to the last page of the ATP/WPT and TSK screen.

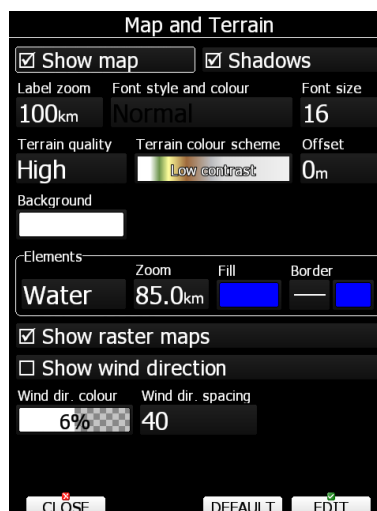
### 5.1.5 Graphics

This dialogue allows the user to define the appearance of the map in navigational mode. Select the **Graphics** menu item and press the **SELECT** button. A submenu will open.



#### 5.1.5.1 Map and Terrain

The main display unit is pre-loaded with terrain and vector maps for the entire planet Earth. The database includes elevation contour lines, water bodies, roads, highways, railways, big cities and a digital elevation model. The database is derived from the OSM free database. The database cannot be modified by the user.



Check the **Show map** item to enable map displays in the navigational pages. If this item is unchecked no map will be displayed. Check **Shadows** if your terrain is to be shaded. The **Label zoom** value defines up to which scale of zoom city names are visible. 100 km means the whole width of the screen represents 100 km. The user can also modify size, font style and colour via the **Font style and colour** item. Use the ZOOM selector knob to modify the colour and the PAGE selector knob to modify the style. Press the **PICK** button to define colours more precisely.

Terrain can be rendered in three different levels. A higher level means more detail. The main display unit is optimised to work with high terrain quality. If the value **off** is selected no terrain will be shown; only water bodies, roads, railways and cities.

The background colour is defined by the **Background** item. The default background is black. **Offset** allows you to move the ground level for the selected scheme.

**Colours of terrain** can be changed using different terrain colour schemes. The following colour schemes are available:

- **Mountain** is the default setting with colours from green to white at 2000 m.
- **Flatland** is a setting where colours are changing up to 1000 m.
- **Flatland2** is a setting where in low terrain is white, otherwise normal colours are used.
- **Low contrast:** same as Mountain but colours are not so intensive.
- **High contrast:** same as Mountain but colours are more intensive and from 0-100 m white colour is used.
- **Zebra** alternating colours are used.
- **Zebra 2,** less intensive alternating colours are used.
- **ICAO** colouring is similar to ICAO maps.
- **Cliffs** colours emphasis slopes and is similar to Google maps display
- **Atlas** colour scheme is approximation of Imhof colouring widely used in map books.
- **Grayscale**
- **OSM**
- **Himalaya**
- **Relative** is a colour scheme related to the current altitude (unreachable areas are coloured from orange to red, reachable areas are white).

In the **Elements** group land features are setup separately. **Zoom** defines up to which zoom level a selected land feature is visible. Also, the line width and colour can be setup. Press the **DEFAULT** button to reset this back to default.

Following elements are available:

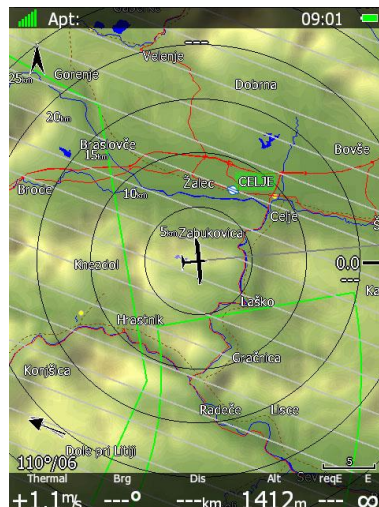
- Water
- Road
- Highway
- Railroad
- Town
- Track
- Airport
- Minor Water
- Forest
- Street
- Minor roads



If you have checked shadows and you are flying over flat areas with elevation close to MSL or below, black spots will be displayed on the terrain. These black spots will disappear if you uncheck shadows.

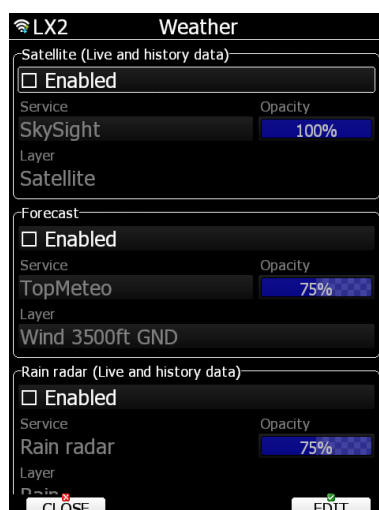
Check **Show raster maps**, if you would like to see also scanned maps (see also Section 5.1.4.7).

Check **Show wind direction** if you would like to see lines indicating the direction of the wind.



### 5.1.5.2 Weather

If the Wi-Fi module is installed the **Weather** menu is also available. During flight there is a possibility to obtain real time weather data if the Wi-Fi module is connected to the 3g hotspot and if the hotspot has mobile signal reception. There are three layers: Satellite, Forecast and Rain radar. You can enable/disable each layer and then customize it by selecting the service you wish to use and the parameter (layer) you wish to display. You can also define the level of each layer's transparency by adjusting the **opacity**. At the bottom of the page there are four additional settings. **History span** dictates for how many hours of history will be displayed. **Freeze present time** holds the last history frame (present weather information) for a set number of seconds. **Forecast time** is used to set for how many hours in advance the forecast is shown. **Minimum zoom distance** is the amount of zoom above which weather layers become visible (if this is set to 0 km weather layers will always be visible). If more than one layer is enabled, they all will be seen. Information about layers can be displayed on screen with a **Weather info** navbox or item legend (see Section 6.3 for information on how to add them).



#### 5.1.5.2.1 Satellite Layer (Live and History Data)

This layer shows current (live) data and history data from satellites. TopMeteo and SkySight services are supported and only one layer ("Satellite"). To use this layer, you need a TopMeteo or SkySight account (see below).

### 5.1.5.2.2 Forecast

The second layer supports two services: TopMeteo and SkySight. It is used for forecasting weather data. You can choose between multiple layer options. To use this layer, you need a TopMeteo or SkySight account (see below).

### 5.1.5.2.3 Rain Radar

Enabling rain radar will show the radar picture layer over the map. Animation shows how the rain is moving over the map and its intensity. To freeze the last picture, adjust the Freeze present time as described above. This service does not require any 3<sup>rd</sup> party login or registration.

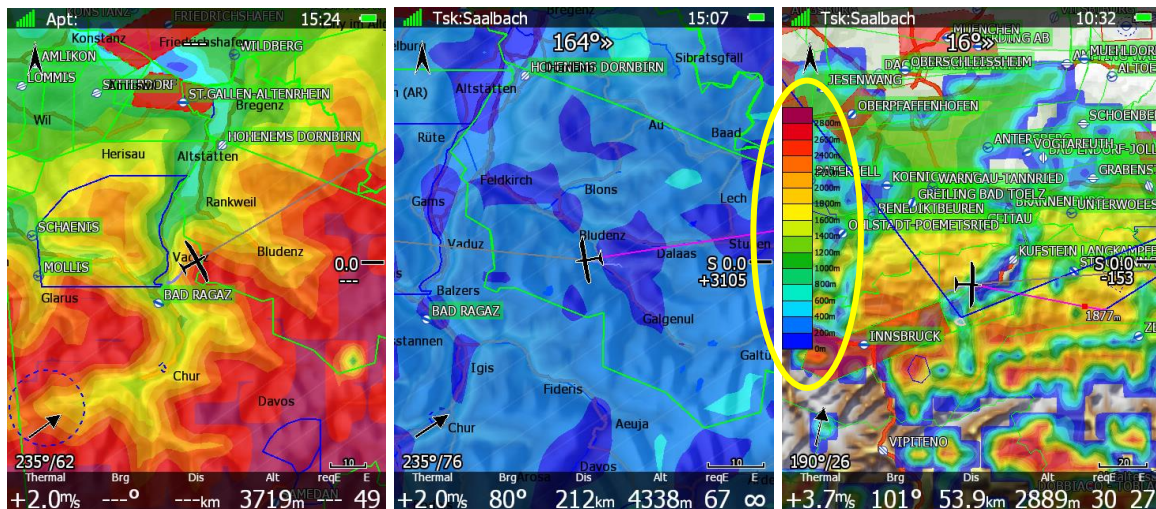
### 5.1.5.2.4 SkySight

SkySight is soaring weather forecast for Australia & New Zealand, South Africa, Europe, America and Japan. To purchase or starting a free trial please visit <https://skysight.io/>. Weather can be loaded during flight or even preloaded in the morning and then viewed during the whole flight for the actual time available. A SkySight account is required. Also see Ch. 5.1.14 on how to add SkySight on your list of services.

Available SkySight layers are:

- Thermal Strength & B/S Ratio
- Height of Thermals
- Depth of Thermals (AGL)
- Cu Depth
- Cu Cloudbase
- Overdevelopment
- CAPE/Storms
- Rain
- Mid level cloud cover
- High level cloud cover
- Forecast Satellite View
- Ridge Lift
- Surface Wind (2m)
- Boundary Layer Wind (Avg)
- Convergence
- Vertical Velocity 600m/1.5km/3km/4km/5km
- XC Speed
- Freezing Level
- Turbulence





To enable **legend**, go to LX Styler and edit page and add item legend. You can then adjust its size and position. The legend will change depending on what weather data is selected.

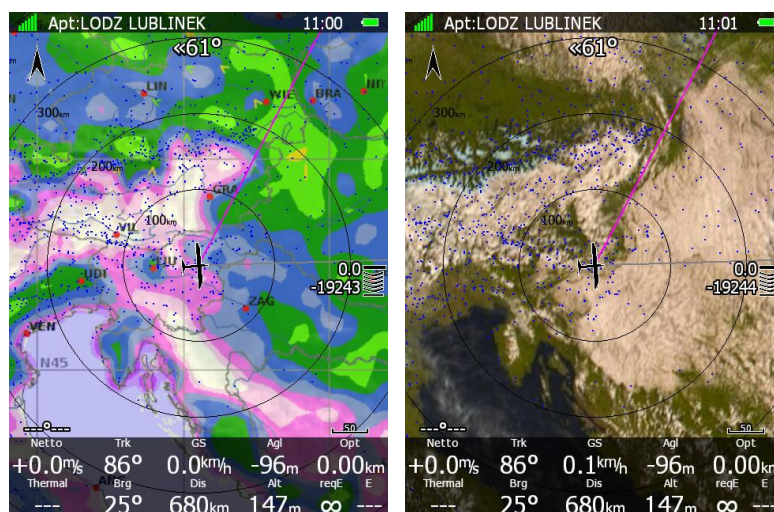
### 5.1.5.2.5 TopMeteo

TopMeteo is a gliding forecast that allows pilots to have daily overview for cross country optimization and with the help of LX Connect also in-flight weather right on your LX80x&LX90x instrument. You can find more information and purchase TopMeteo on <https://topmeteo.com>.

Available TopMeteo layers are:

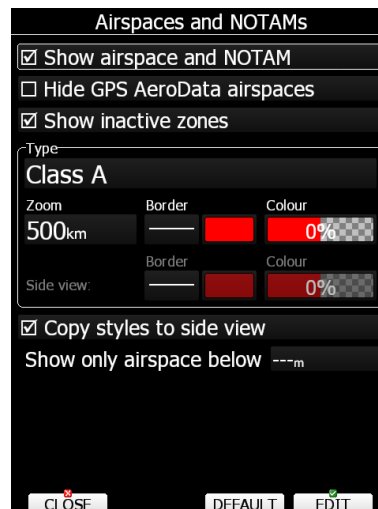
- Satellite (Satellite layer)
- Potential flight distance (18m) (Forecast layer)
- Cloud distribution (Forecast layer)
- Wind 3500ft (GND)

More layers will be added with future updates.

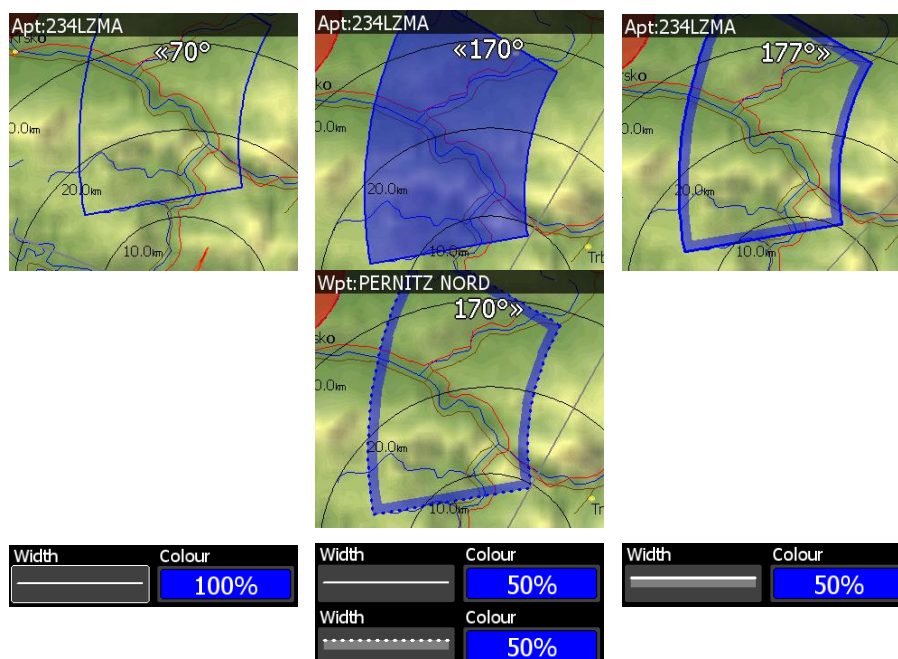


### 5.1.5.3 Airspace and NOTAMs

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



If you do not want to see GPS AeroData airspaces select **Hide GPS AeroData airspaces**. If the **Show inactive zones** option is checked, then airspace zones with proximity warning switched off will be shown. 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 **Type** panel 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. The **Zoom** value defines to which zoom level this type will be visible. The **Colour** and **Width** items specify how selected airspace zone will be drawn. You can also modify the transparency of the selected type. Turn the ZOOM selector knob to change the transparency value. 0% means completely transparent and only the airspace zone outline will be shown. 100% means completely solid (not recommended). The image below shows examples of combinations of the Width and Colour properties and rendering of the airspace zone.



You can set separately airspace colour and border for the side view and map view if the option **Copy styles to side view** is not checked. Press the **DEFAULT** button to reset these settings back to default.



As seen in an example above airspace will NOT be colored in if the Width type is set as line and a secondary transparent line (examples 3 and 4).

#### 5.1.5.4 Waypoints and Airports

The waypoint and airport look and feel is defined in this dialogue. Check the **show waypoints** item to enable waypoints and airports display in navigational pages. If this item is unchecked no waypoints will be displayed. If **duplicates** are checked duplicated points might be shown on map when same waypoint (airfield) is defined in a user file as in the airport database. Use **show only airports from database** to display only airports from the database within airport mode.

The **Max.visible** item defines how long waypoint labels 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. **Symbol size** can also be adjusted.

Font style, colour and size can be defined using the **Font style and colour** item and the **Font size** item. When editing style, turning the ZOOM selector knob will change the font colour.

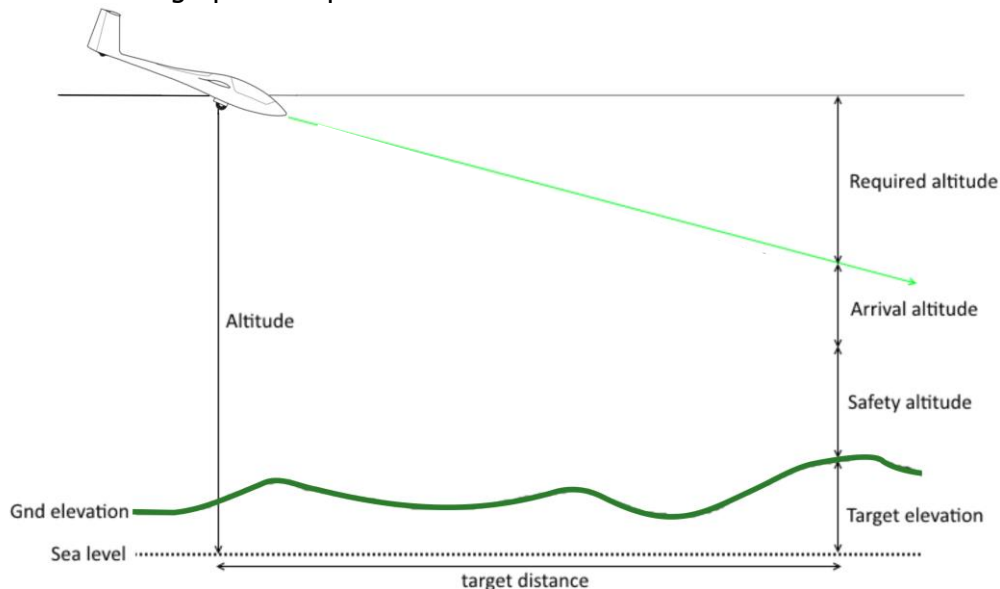
Waypoint labels can be setup to give even more detail. Label details can be defined for each individual waypoint type (all types, all landable, unknown, waypoint, mountain top, grass airfield, out landing, glider site, solid airfield, mountain pass, sender, VOR, NDB, Cooling tower, Dam, Tunnel, Bridge, Power plant, Castle, Intersection, Marker).

A label consists of two selectable values: upper label and lower label. If you prefer labels to be in a single line, the **single label** checkbox should be checked. A label can also be coloured. Check the **Colorize label** item. Coloured labels are drawn with a green background when the waypoint is within range with the current MacCready setting and with a yellow background when the waypoint is within reach with MacCready setting zero. No background is shown if the waypoint is not reachable.

The label is selected from following options:

- **Name:** the waypoint name is shown. The name length item controls how the name is displayed.
- **Code:** will display the ICAO code or short name.

- **Elevation:** shows waypoint elevation.
- **Arrival altitude:** shows arrival altitude taking into account safety altitude and glide ratio. Due to complexity of the calculation it will not take the wind profile into account.
- **Required altitude:** shows how much height is needed to reach the point. Required altitude takes into account glide ratio, safety altitude and current wind. Due to complexity of the calculation it will not take the wind profile into account. More can be found on the graphical explanation below.



- **Frequency:** will display the point frequency if available.
- Define **minimum runway length** and **minimum runway width** to filter out runways that are too short or narrow. Such landing places will still be shown in nearest list, but they will be marked with red cross to indicate that they are not usable.

Near			
Name	Dis	Brg	Arr
✖ BELLUNO	52.3km	165°	1214m
Rwy: 05/23-G-812m/0m    Freq: 119.650    Elev: 378m			
Description:			
♦ BOLZANO	59.6km	252°	1164m
✖ LIENZ NIKOLSDO	65.0km	72°	731m
✖ Lienz	65.5km	72°	716m
✖ Enemonzo	67.0km	110°	878m
♦ AVIANO AVIANO	177.1km	147°	797m
♦ PORDENONE COM	83.1km	146°	695m
✖ Rivoli	88.3km	118°	500m
♦ INNSBRUCK	89.9km	322°	129m
✖ ZELL AM SEE	92.6km	36°	-60m
♦ ASIAGO	92.2km	207°	-585m
♦ TRENTO MATTAR	98.5km	227°	104m
✖ ST JOHANN/TIRO	104km	16°	-267m
♦ RIVOLTO RIVOLT	104km	132°	155m
SORT    FREQ    VIEW    GOTO			

Press the **DEFAULT** button to reset these settings back to default.



### 5.1.5.5 Glider and Track

The navigational screen can show the coloured path flown, current track vector and target vector with terrain collision warning.

The image shows two side-by-side screenshots of the 'Glider and Track' settings menu. The left screenshot shows the 'Show path' section with 'Path length' set to 829min and 'Path style' set to vario. The right screenshot shows the 'Show current track' section with 'Track colour' set to magenta and 'Track width' set to 16. Both screenshots show options for 'Show target', 'Show collision', 'Show range circles', and 'Show glider range area'.

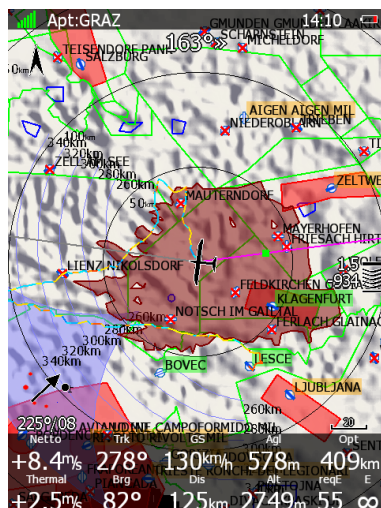
Check the **Show path** item if you want to see the flown path. **Path length** defines how much of the flown path will be shown. The path can be coloured using:

- **Fixed** path style. The path colour is fixed and defined by the path colour item.
- **Altitude** path style, where red colour means low altitude and blue means high altitude.
- **Ground speed** path style, where red colour means slow speed and blue colour means fast speed.

Check the **Show current track** item if you would like to see your current ground track vector. **Track colour** and **width** defines the colour and width of the current track vector. Selected target and current position are connected with a magenta line.

Check **Show target** if you would like to see this line. In the target colour and target width you can select the **Colour** and **Width** of this line. You can also choose to show or hide the terrain collision point and the target line itself. The terrain collision marker is a red square which is only displayed when there is terrain between the navigational point and the current position and therefore not enough altitude to reach the target with the current glider settings. **Font Style**, **Colour** and **Size** define which font for terrain collision altitude and range circles.

Enable **Show range circles** to plot range circles around the aircraft symbol. Having range circles on navigational screen makes it much easier to estimate the distance to the nearest point of interest. **Range colour** and **range width** define the way circles are rendered. A built-in engine noise level sensor detects if engine is running or not. Use **Engine colour** and **width** properties to visualize part of path where engine was running.



Use **Show glider range area** to display the reachable area from the current altitude with current wind and MacCready settings. Use **area colour** and **area border** to define its properties.

The area can be filled outside or inside. **Glide ratio** defines the past flown average efficiency which will be used for the average efficiency calculation for the glider range area. **Fill area** can be outside or inside the range area.

Press the **DEFAULT** button to reset these settings back to default.

#### 5.1.5.6 Route

Use this dialogue to define how a route is drawn in route mode.

**Route colour** defines the colour of task lines. **Obs.zone colour** defines colours for observation zones. Use the ZOOM selector knob to change transparency of area. 0% means completely transparent and only the outline will be drawn. 100% means completely solid (not recommended). When **Show flown route** is checked also the flown task will be drawn. This might be useful when flying assigned area tasks.

The **Show selected zone only** item controls whether all route observation zones are to be displayed or, if there is only one, then that alone will be shown.

### 5.1.5.7 FLARM

The system can be equipped with the internal or external FLARM module. If your device is equipped with FLARM this menu will allow you to modify the presentation of the FLARM radar display.



FLARM radar is not available if competition or privacy modes are active. Refer to Section 0.

Checking **Show Flarm object** will enable display of aircraft detected by FLARM.

Colours are designed to present three values. The colour for aircraft more than 100 meters above your current altitude is defined by the **Above Colour** item. The colour for aircraft more than 100 meters below your current altitude is defined by the **Below Colour** item. The colour for aircraft that are less than 100 meters below or above your current altitude is defined by the **Near Colour** item.

When a signal from a particular aircraft is lost the aircraft remains blinking on the screen for the duration defined in the **Lost device after** item (default 120 seconds). After that time the aircraft symbol will be removed.

The **Show labels** combo box defines for which FLARM objects altitude and vertical speed are displayed next to the aircraft symbol. The user can modify size, font style and colour. Select the **Font style and colour** item. Use the ZOOM selector knob to modify colour and the PAGE selector knob to modify style.

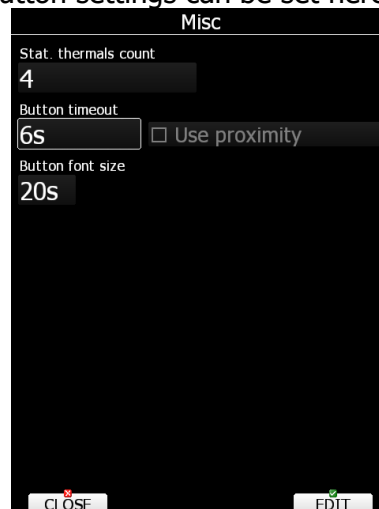
It is possible to display the flown path of tracked aircraft. **Path colour** and **Path width** define width and colour of paths. The **Show paths** combo box defines for which FLARM object paths will be visible.

**Symbol size** defines the size of the symbol of a FLARM object.

Check **Show PCAS** to see non-directional traffic on the navigational 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.

### 5.1.5.8 Misc

Statistics thermals count and button settings can be set here.



Screen button appearance can be set by **button timeout** time. For newest instruments proximity buttons can be used. Proximity will be detected after any touch of a button if **Use proximity** is ticked. The **button font size** can be set here.

### 5.1.6 Warnings

FLARM warnings are triggered when conflicting traffic is in the vicinity.

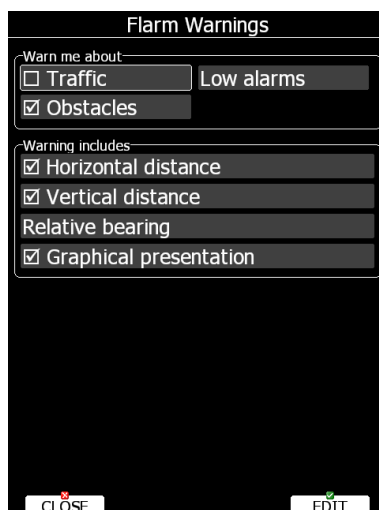
FLARM warnings will be raised only when the system is receiving FLARM data from an internal or external FLARM module. Using this dialogue the user can define which warnings will be shown and how they will be shown. There are three types of warnings:

- **Traffic** warnings will be raised once a new aircraft is detected by FLARM.
- **Obstacles** warnings will be displayed when a collision with a ground obstacle is predicted. An obstacles file should be loaded.
- **Alert zones** are marked by ground stations to notify pilots of active parachute drop zones, RC/RPAS/UAS flying areas or similar.
- The **Low alarms, Medium and High alarms** combo box define alarm levels at which system will display collision warnings.

Explanation of alarms:

- **Low alarms:** For distant FLARM targets the main unit can give a short or long message, just a beep or be turned off (19-25 seconds before possible collision).
- **Medium alarms:** For distant FLARM targets the main unit can give a short or long message, just a beep or be turned off (14-18 seconds before possible collision).
- **High alarms:** For very close FLARM targets the main unit can give a short or long message, just a beep or be turned off (6-8 seconds before possible collision).

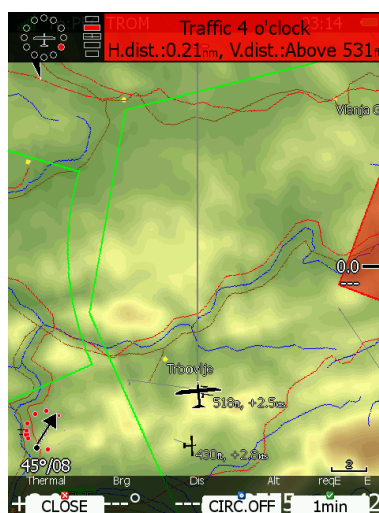




During competitions it is recommended to select Medium or High alarms, otherwise too many warnings will be displayed. Medium or High means that only the most important alarms will be triggered.

If the voice option is installed it is also possible to hear the horizontal and vertical situation of the current object. Uncheck appropriate items if you want to disable this part of the message. You can also define the way the direction to the FLARM object will be presented. There are three options:

- **Relative bearing:** In this option direction will be given relative to the glider's nose direction (e.g. *Traffic 3' o'clock*, which means traffic is on your right side).
- **True bearing:** The direction is given as absolute direction (e.g. *Traffic from 330°*)
- **Relative/True bearing** is a combination of both methods. Relative bearings will be given when flying straight and true bearings will be given when thermaling.
- **Graphical presentation:** When this item is checked a graphical presentation of FLARM will also be shown when a FLARM warning is displayed.



The picture above shows typical FLARM warning with graphical presentation and relative bearing of the object. Press CLOSE to dismiss warning, CIRC.OFF to dismiss for time of circling and 1min to dismiss all FLARM warnings for one minute.

## 5.1.7 Units

Units			
Distance	Altitude	Temperature	Pressure
km	m	°C	mbar
Speed	XCspeed	Vert. speed	Wind
km/h	km/h	m/s	km/h
Weight	Load	Course	UTC offset
kg	kg/m2	true	+0.0
Volume	Longitude/Latitude		
l	DD°MM.mmm'		
Ballast	Dump rate		
overload	per minute		

At the bottom, there are three buttons: CLOSE, IMPERIAL, and EDIT.

The lower-middle button will toggle all units between imperial and metric units.

Glider ballast can be entered as:




- **overload** factor, which is defined as:

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

- **Load**, which is entered in kg/m<sup>2</sup> or lb/ft<sup>2</sup>.
- **Weight of water ballast.** If this option is used the weights of the glider and pilot must be entered. Refer to Chapters 5.1.2 for more details of how to enter glider and pilot weights.

## 5.1.8 Hardware\*

Use this menu to define hardware properties such as FLARM module, battery settings and analogue inputs.

Hardware		
		
Flarm & ADS-B	Battery Types	Analog Inputs

At the bottom, there are two buttons: CLOSE and SELECT.

### 5.1.8.1 Remote Stick\*

When a remote stick is connected to the system it is possible to define the type of remote stick via this menu. If a LXNAV remote stick with six buttons is connected, the user can specify the functionality of the function buttons. There are several options available for the function button:

- **VOLUME** will call volume menu onto the screen.
- **Toggle map settings** will toggle between two stored map settings.
- **SELECT** will call the airport select menu or waypoint select menu or task edit depending on the current navigational page.
- **MAP** will open the map properties dialogue.
- **WIND** will open the wind selection dialogue.
- **AIRSPACE** will open the airspace zones dialogue.
- **MARK** will create a waypoint or marker at the current position.
- **FLARM** will display a list with all FLARM objects in vicinity.
- **PAN** will set the navigational screen into pan mode.
- **EVENT** will mark an event into the current IGC file.
- **ROT.FAI** will rotate the FAI triangle area, if shown on navigational screen.
- **TEAM** opens the dialogue to enter a team partner code.
- **Screenshot** will make a screenshot.



To activate the Function button, press FN on the remote stick and the field in the menu will become active; the same procedure applies to the Front SC button.

### 5.1.8.2 FLARM\*

On the FLARM setup page information about built in or external FLARM are visible. Information such as serial number, selected frequency, firmware version and database versions are shown. The serial number will appear after you leave instrument running for a few minutes.

Press the **CLEAR** button to delete all data on the FLARM module. This will also remove the obstacle database.

If the FLARM module is built in the user can select the operation mode. There are three different operational modes available:

- **Power OFF** - FLARM unit is switched off.
- **Power ON** - FLARM unit is switched on.
- **Stealth ON** - FLARM unit works in stealth mode. Other FLARM units will not receive altitude and vario information concerning your glider (only a dot will appear on their instruments). For collision warnings this mode has no influence.

If there is no FLARM module built into the main display unit instead the operation mode combo box **Baud rate** selection will be displayed.

**Freq** shows selected frequency depending on the continent where the system is located. The FLARM Frequency is automatically updated based on the current continent.

**Port** defines the serial interface through which FLARM data are being received.

- **Internal** is the default setting and indicates that the internal FLARM will be used, if this option is installed.
- **Ext. (PC)** – Use this mode when you want to receive an externally connected FLARM via the PC port.
- **Flarm** – this port is available on selected devices only and means that FLARM input will be via the port labelled FLARM.
- **GPS** – port is available on simple type of devices only and means that FLARM input will be via the port labelled GPS.



Classical external FLARM can be updated through the main device. PowerFLARM can be updated only via a USB stick.

Refer to the installation manual and Section 10.1 of this manual for more details.

**Device ID** shows the FLARM unique ID which is transmitted to other FLARMS. The user can change that ID. The ID is normally changed if we have XPDR on board. In this case we set ID to XPDR ICAO ID.

**Competition mode** is intended only for competitions. If this mode is enabled the pilot will not be able to see any FLARM data on the navigational screens. The competition mode status is recorded in the IGC file and can be checked during scoring. Range of view is also limited.



If you are flying in a competition it is sufficient to turn on **Competition mode**. However, if you do not want other aircraft to see you, you can also switch mode to **Stealth ON**.

**Reduce warnings** will significantly reduce FLARM warnings. Use this option if you are flying in gaggles or areas with high density of other aircraft.



We recommend you sign in at FlarmNet.org. This is free of charge. Registering with FlarmNet allows others to see you not only with Device ID but also with your contest number and name. Refer to Section 6.2.1.9.

The **Send declaration** check box is available only when an external FLARM is connected. Check this option if you want task declarations to be automatically transferred to FLARM.

**No tracking** will disable tracking mode. If set, receiving ground stations do not process or store position data of aircraft. For example, you will not be visible on OGN.

**PCAS** (non-directional traffic) horizontal and vertical range can be set here. Next to it to the right the same can be done for **ADS-B** (Automatic Dependent Surveillance-Broadcast) traffic. If you scroll all the way to the maximum value range will be set to "Unlimited". The same can also be achieved by pressing the "Unlimited" button that appears once you start editing a value.

You can also see your FLARM **serial** number, **version**, **capabilities**, **licenses** and **obstacles** loaded (if they are loaded).

Capabilities abbreviations:

- DP2 – second data port

- OBST – device can give obstacle warning if database is installed and license is valid
- RFB – Second radio channel for antenna diversity

Licenses abbreviations:

- RFB – activation of second antenna
- PRE – activation of pressure sensor functionality
- L6S – Activation of LEA-6S-GPS module



The FLARM internal number can be seen in the last row, next to the current SW version. The internal number will not appear immediately after powering on the main device – it can take up to 5 minutes to appear. The internal FLARM number can be also seen within the IGC file.



PCAS and ADSB configuration is possible only for integrated ADSB modules. It will not work with the TRX1090

### 5.1.8.3 Battery Types\*

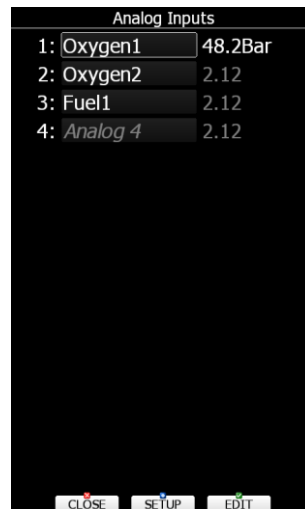
This menu defines the type of battery being used. Selecting the type of battery is important to correctly display low battery warnings.

Battery Types		
Type	Lead Acid	
Empty Voltage	Low Battery V.	Full Voltage
11.0V	11.3V	12.5V
Offset	Current Voltage	
+0.0V	0.8V	
<div> <span>CLOSE</span> <span>EDIT</span> </div>		

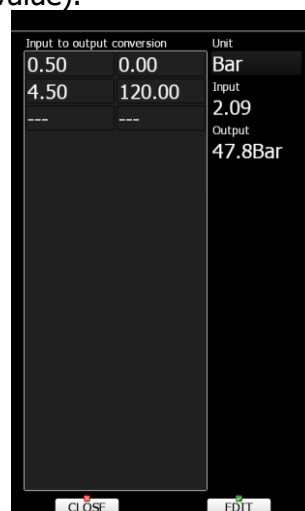
Use the **Type** combo to select the appropriate type of battery (Lead Acid, LiFe, LiPo, custom). You can see the empty, low and full voltages for the selected type of battery. In case of a voltage drop due to cable lengths you can set up the voltage **offset** there to the **current voltage** measured.

### 5.1.8.4 Analog Inputs

Analog inputs can be brought through with the LXdaq (data acquisition unit). LXdaq is a unit connected to the **RS485 bus** with 4 customizable analog inputs 0 to 5V. It can be edited under Setup>Hardware>Analog inputs.



The user can program each analog input by pressing **Setup**. You can change the name of the input and enter a conversion table for a sensor connected to that input (which output value applies to which measured value).



An example is measuring of oxygen pressure on the bottle.



### 5.1.9 Profiles and Pilots

All settings and navigational page layouts are stored in a profile. Profiles can be used in different ways:

- For club operation or multiple pilots sharing the same glider. Each pilot can have his personal profile.

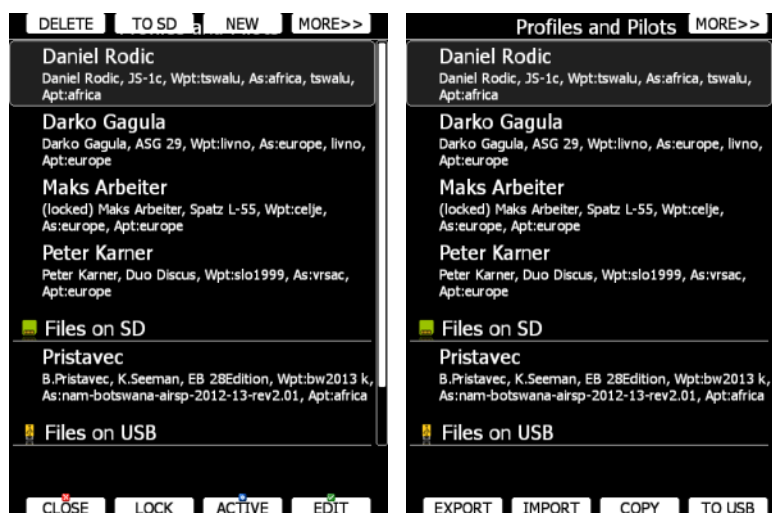
- When the user is flying a glider which can have a variable wingspan. In this situation the pilot has two profiles; one for each configuration.
- When a pilot is flying in several different locations. A separate profile for each location can be created (examples: France, Spain, Namibia, WGC2014).

A profile consists of two parts:

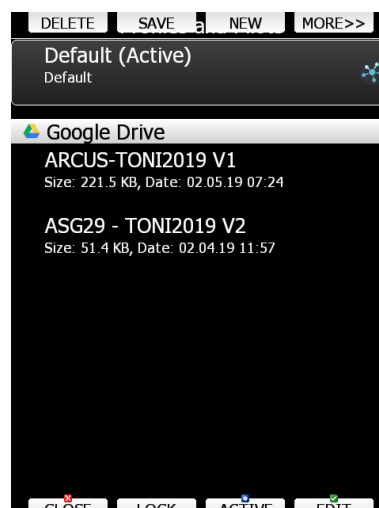
- **Navigational page layout** defines which navboxes and symbols are visible on navigational page. It defines colour of navboxes, font sizes and colours, how many navigational pages are visible and which modes are enabled. Navigation page layout can be setup with LX Styler or on device itself (see Chapter 6).
- **Device settings** includes glider polar, selected databases, selected airspace and waypoints file, map colours, vario indicator settings and flight computer properties. Device settings can be modified on the device itself through the setup menu (see Section 5.1) or with LX Styler.

An active profile is selected when the system is powered on (see Section 6.2.2).

### 5.1.9.1 Add/Load Profile



Use this dialogue to add a new profile, delete a profile, load/save a profile, copy device settings, change the name for an existing profile and to activate a profile. The active profile is the profile which is currently being used. Select a profile using the PAGE selector knob. Press **TO USB** or **TO SD** for the profile to be stored to a USB stick or SD card. Press **TO MAIL** to send the profile to email. A profile is stored as a file with the **.lxprofile** extension.





Press the **LOAD** button to load a profile from a SD card or USB stick. A profile will be copied to the main display internal storage. If you are using LXNAV Connect with Google Drive or Dropbox service, all profiles stored there will automatically appear at the bottom of the list and you can download them by clicking **LOAD**. You will be asked if you want to automatically sync this file. For details on that see the Section below. If a profile with the same name already exists on your device, you will also be asked to rename the new profile. You can also save profiles on your device to your LXNAV Connect by selecting Save -> LXNAV Connect -> Google Drive/Dropbox -> Send.



The LX80x/90x will detect ALL profile files (.lxprofile) stored on your Google Drive/Dropbox. Only profile files created specifically for your device type (for example LX808) will work properly.

Press the **EDIT** button to edit the profile name, **pin protect** or **lock** it.

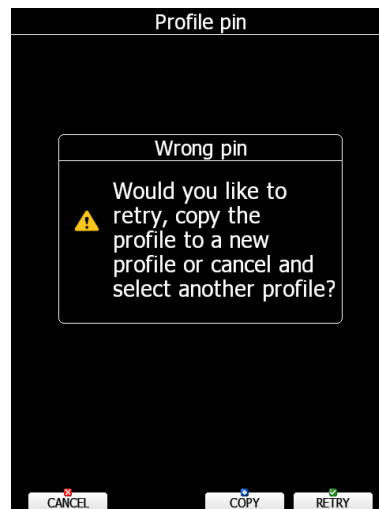


**Pin protect** your profile if you don't want anyone else to use your profile. This is recommended if your profile is registered to the LXNAV Connect service.



If you forgot the PIN, instrument will ask you if you would like to retry or copy the profile to a new profile. Your profile will be copied but without pilot data, saved

Wi-Fi networks and without the LXNAV Connect service.



The **Locked profile** option is very useful for club operation where one does not want a global club profile to be changed. When a profile is locked all settings will be read-only. Check the **LOCK** option to lock/unlock a profile. When a profile is locked a message (locked) will be written below the profile name.

Press **ACTIVE** to make the selected profile the active one.



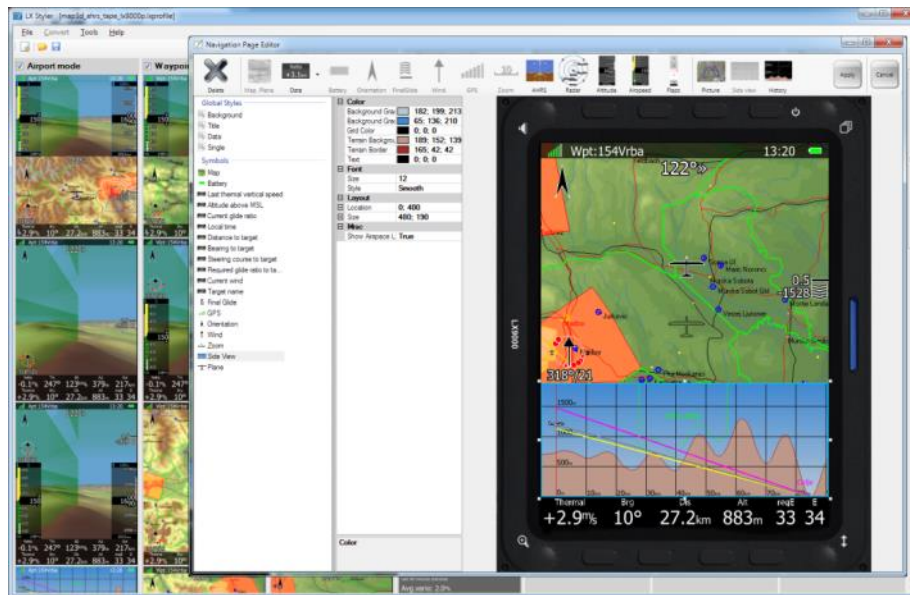
When a profile file from a USB stick or SD card is selected, it will be available only if the SD card or USB stick is inserted in main display unit.



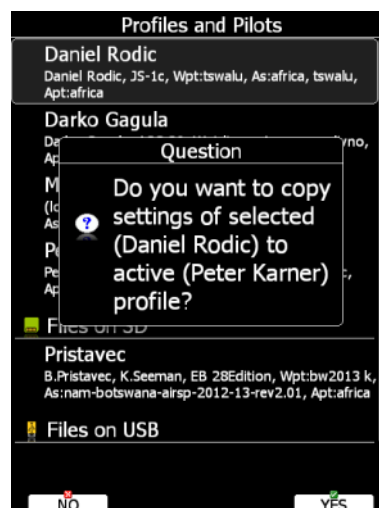
Selecting profiles from a SD card or USB allows you to create portable profiles, which can be transferred from one device to another.

### 5.1.9.2 LX Styler

A profile file can be opened and manipulated with the LX Styler program. LX Styler is a special program designed to customize layout navigational pages. It can be downloaded free of charge from our web pages [www.lxnav.com](http://www.lxnav.com). For more information about LX Styler please refer to the LX Styler manual.



If a new profile is created via LXStyler it will have default device settings. However, it is possible to copy device settings from one profile to another. Select the newly created profile as the active profile. Select the profile from which you would like to copy settings to the active profile. Press the **COPY** button. A confirmation dialogue will open.



It is also possible to export a profile including all the airspace files and waypoint files. Use the **EXPORT** and **IMPORT** button to export/import a profile with airspace and waypoint data.

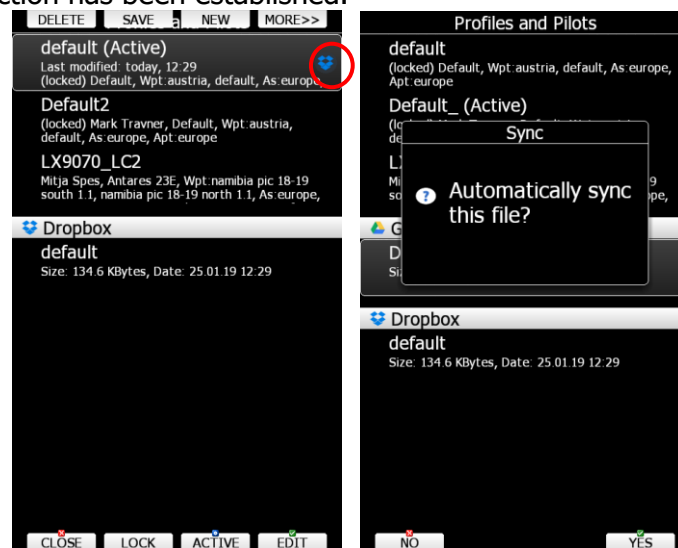


**Export** saves a file with the LXPACK extension which includes: Airspace, Waypoints and LX profile.

### 5.1.9.3 Sync

Profiles can be automatically synced between your instrument and LX Styler. To enable this option, select the profile where you wish this option is enabled and go to Save -> LXNAV Connect -> Google Drive/Dropbox (or both) and click **SYNC**. A blue icon will appear next to the profile. Now every time you edit this profile in LX Styler changes will automatically appear also in your LX80/90x device. It works in both ways, so if you change settings on your LX80/90x device, the profile will be synced with the one on your drive. For this to work LX Connect (see next section) must be paired, Google Drive or Dropbox service connected

and a Wi-Fi connection established. For more information on how to upload/download and edit profiles in Styler please see our LX Styler manual. The sync is automatically performed once a Wi-Fi connection has been established.

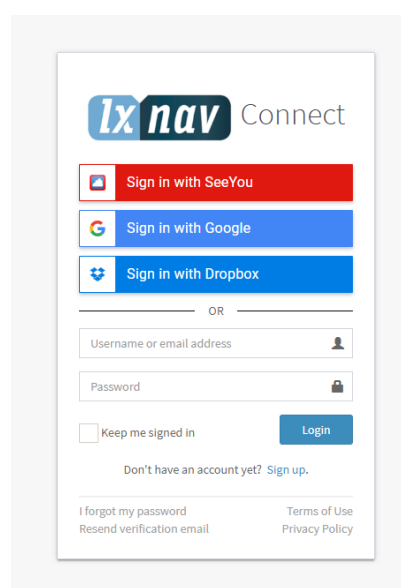


Editing profile in Styler and in the instrument at the same time can produce an error. Never try editing your profile with both Styler and in the instrument at the same time!

### 5.1.10 LXNAV Connect

LXNAV Connect is a feature that allows you to overview and manage all your data and flight upload services. Once you have Internet access you can check the status of each individual service.

#### 5.1.10.1 LXNAV Connect Login





A WIFI module is required for LXNAV Connect to work.

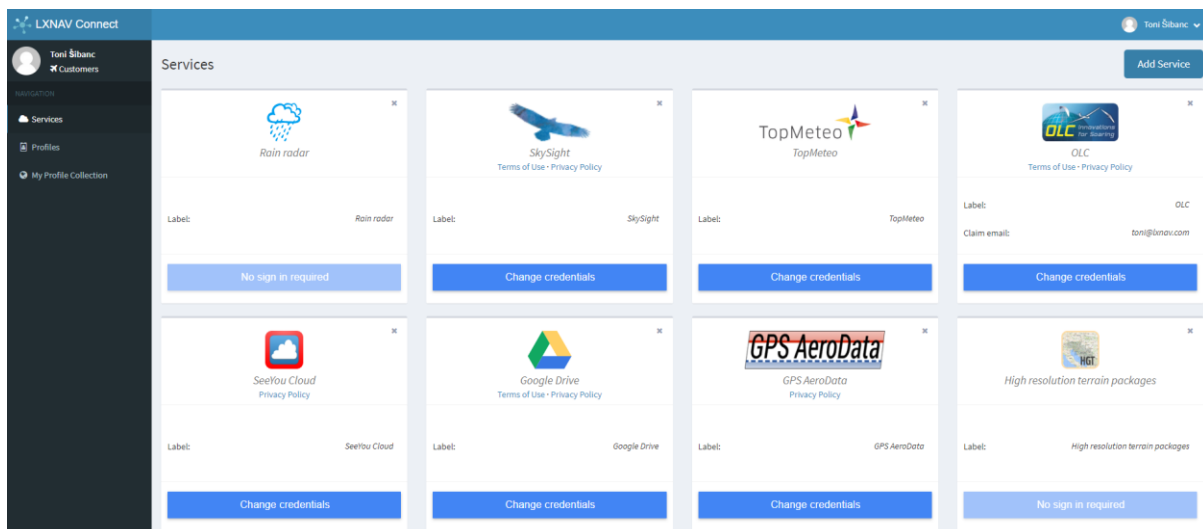
To login and connect all the different services please visit <https://connect.lxnav.com/account/sign-in> on your preferred web browser. First you have to sign up with a LXNAV Cloud account, or login with Google, Dropbox, or SeeYou account. You can also recover your lost password by clicking "**I forgot my password**".

Account settings can be managed in the top right corner.

### 5.1.10.2 Services

LXNAV Connect offers following services:

- US Sectional Charts
- Rain Radar
- GPS AeroData
- High resolution terrain packages
- OLC
- SeeYou Cloud
- Google Drive
- Dropbox
- SkySight
- TopMeteo



To add a new service press, **Add Service**, select the desired service and login. To remove a service press **X** in the top right corner of the service box.



Note that not all services are free and some must be purchased. You can do that by visiting the website of the service you wish to obtain.

Free available services are:

- US Sectional Charts
- Rain radar
- High resolution terrain packages
- OLC
- SeeYou Cloud

- Google Drive
- Dropbox

Services, that require a login account to be purchased:

- TopMeteo
- SkySight

#### **5.1.10.2.1 US Sectional Charts**

US Section Charts provides users with Sectional Aeronautical charts provided by FAA for the area of United States of America. Once this service is connected maps will be downloaded and be available for selection in the Files and transfer>Maps menu. To see these charts on any of the navigational pages you also must enable them by going to Graphic>Map and Terrain>Show raster maps.

#### **5.1.10.2.2 Rain Radar**

Rain radar is currently available for Europe only and is free of charge.

#### **5.1.10.2.3 GPS Aero Data**

GPS AeroData is a database that contains airspace, NOTAMs and customized information. The database is generated and refreshed each day between 03:00 and 20:00 UTC with a 15-minute interval. It can be found at: <https://www.gps-aerodata.com/en/en-home/> - at the top bar click on **Subscribe**. A login with **email** is required.

To make it work you have to go to the PocketFMS website (<https://members.pocketfms.com/>) where you need to enter your device's serial number. A maximum of 2 devices are allowed. For more information, please contact PocketFMS.

#### **5.1.10.2.4 High Resolution Terrain Packages**

High resolution terrain maps are available free of charge. You can install them by going to SETUP->Files and Transfer -> Maps.

#### **5.1.10.2.5 OLC**

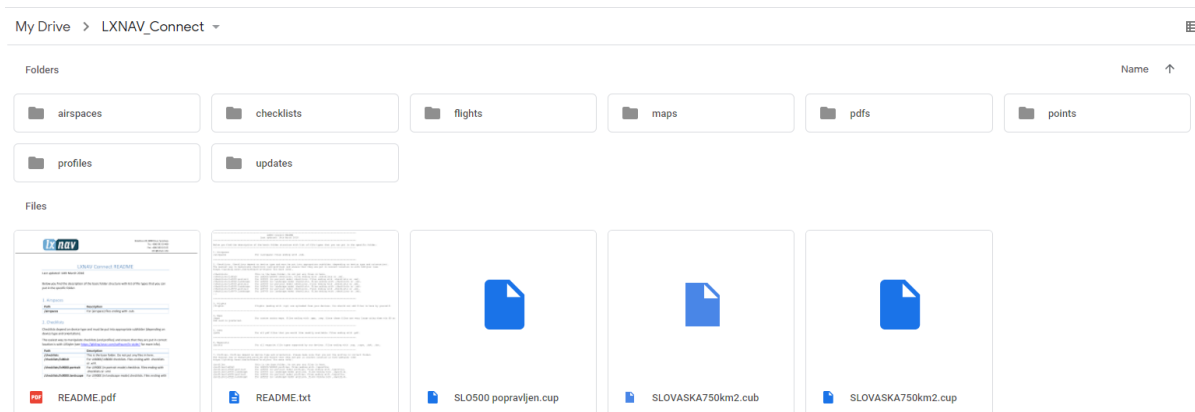
The OLC service allows to directly upload an IGC file immediately after landing. OLC login details should be managed here: <https://connect.lxnav.com/dashboard/services>

#### **5.1.10.2.6 SeeYou Cloud**

SeeYou Cloud is a free of charge cloud service which allows you to save Waypoints, Airspaces and flights. Register it at <https://connect.lxnav.com/dashboard/services>

#### **5.1.10.2.7 Google Drive**

Google Drive allows you to save Waypoints, Checklists, Airspaces, Profiles and flights. Register it at <https://connect.lxnav.com/dashboard/services>













Google Drive -> LXNAV\_Connect

### 5.1.10.2.8 Dropbox

Dropbox allows you to save Waypoints, Checklists, Airspaces, Profiles and flights. Register it at <https://connect.lxnav.com/dashboard/services>

Dropbox > Apps > LXNAV\_Connect

Name ↑	Modified ▾	Members ▾
 airspaces	--	Only you
 checklists	--	Only you
 flights	--	Only you
 maps	--	Only you
 pdfs	--	Only you
 points	--	Only you
 profiles	--	Only you
 updates	--	Only you
 README.pdf	5 hrs ago	Only you
 README.txt	5 hrs ago	Only you

Dropbox -> Apps -> LXNAV Connect



A folder LXNAV Connect will be created in the root folder on your Google drive and in the Apps folder in Dropbox. This is the place where you can upload all your files for the instrument to access them. For details on where to upload specific files read the README.pdf or README.txt file which you can find in the folder.



In order to protect your privacy LXNAV Connect can only access data located inside the LXNAV Connect folder in your Dropbox/Google Drive!



It is possible to pair more Dropbox accounts to LXNAV Connect service.

#### 5.1.10.2.9 SkySight

SkySight weather with weather layers is supported on the navigation pages. Weather can be loaded during flight or even preloaded in the morning and then seen during the whole flight for the actual time available. A SkySight account is required.

Following weather data is available:

- Thermal Strength & B/S Ratio
- Height of Thermals
- Depth of Thermals (AGL)
- Cu Depth
- Cu Cloud base
- Overdevelopment
- CAPE/Storms
- Rain
- Mid-level cloud cover
- High-level cloud cover
- Forecast Satellite View
- Ridge Lift
- Surface Wind (2m)
- Boundary Layer Wind (Avg)
- Convergence
- Vertical Velocity 600m/1.5km/3km/4km/5km
- XC Speed
- Freezing Level
- Turbulence



To adjust Rain radar and SkySight options go to Graphic>Weather Layers (see also Section 5.1.6.9).

#### 5.1.10.2.10 TopMeteo

TopMeteo weather data is also supported. A TopMeteo account is required.

The following weather data is available:

- Potential flight distance (18m)
- Cloud distribution
- Wind 3500ft (GND)
- Satellite picture



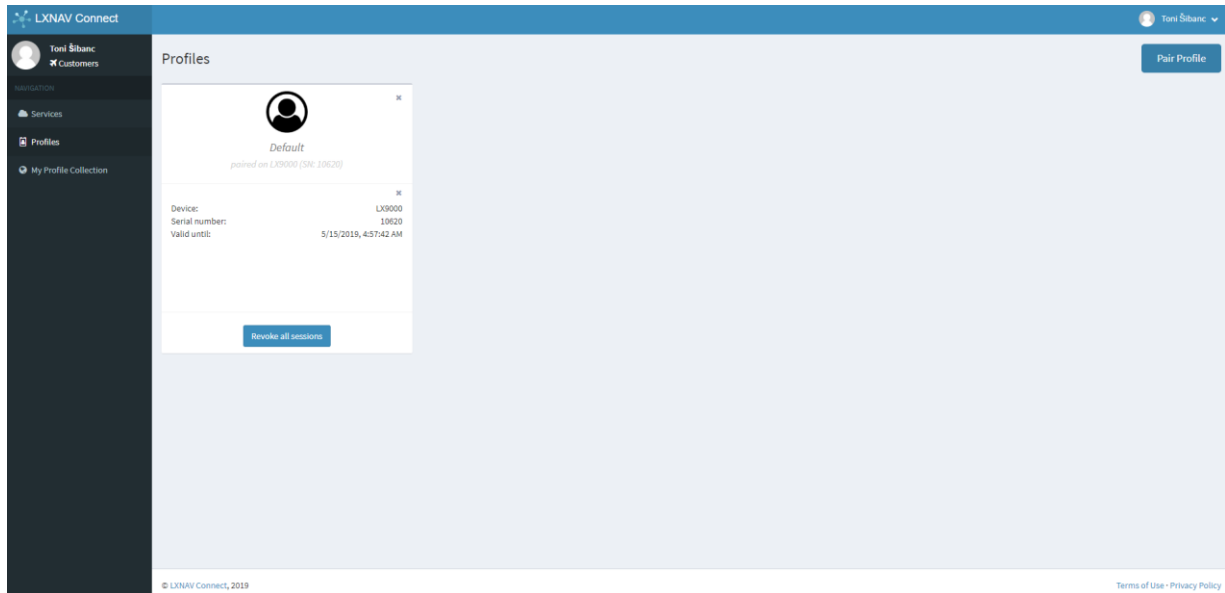
To adjust Rain radar and SkySight options, go to Graphic>Weather Layers (see also Section 5.1.6.9).



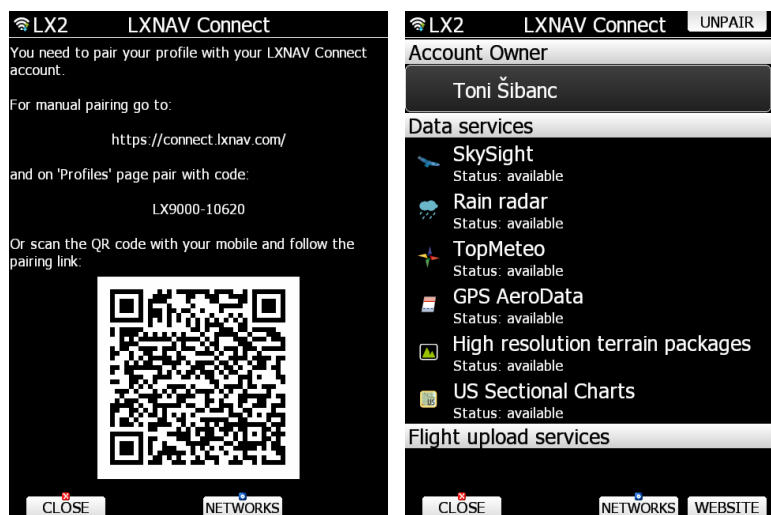
### 5.1.10.3 Profiles

#### Pair profile via the WEB browser.

In the LXNAV Connect webpage on your computer go to **Profiles** and click **Pair profile** and enter the code described above. To remove a profile simply press **X** in the top right corner of the profile.



#### Pair profile on the device.



You can pair multiple profiles to the same LXNAV Cloud account. On your LX80/90xx device go to LXNAV Connect page. If a profile is not yet paired there will be a welcome page with instructions on how to pair, link to the website and QR code that you can scan with your smartphone. There is also a code in the format of LXyyy-xxxxx (yyy – device model for example LX800, xxxxx – serial number).



Each profile of your instrument can only be paired with one LXNAV Connect account.



If you try to change the name of the profile (pilot name), the profile will automatically unpair to prevent unwanted pilots accessing your profile. If you modified your profile intentionally simply pair it back again as you did before.



Please note that any user of your LX80/90x can access your profile if it is saved on the device and will be able to access your services including the ones you are paying for, if they are added to your profile as described below. You can avoid this by having your profile only on SD card which you remove after flying.

### 5.1.10.3.1 My Profile Collection

Pilot Profiles can be uploaded via LX Styler to LXNAV Profile Collection

<https://gliding.lxnav.com/lxdownloads/profile-collection/>

A published profile can only be deleted here by clicking on the "X" button.

The screenshot displays the LXNAV Connect web interface. On the left is a dark sidebar with the LXNAV Connect logo and user information for Toni Šibanc (Customers). The main content area is titled 'Published profiles'. It features a profile card for 'ASG29 TONI2019 V2' by 'LX9070 Portrait'. The card includes three 'Thermal Page' thumbnails, a star rating of 4.17, and an information icon. A red circle highlights a small 'X' button in the top right corner of the profile card, which is used for deleting the profile.

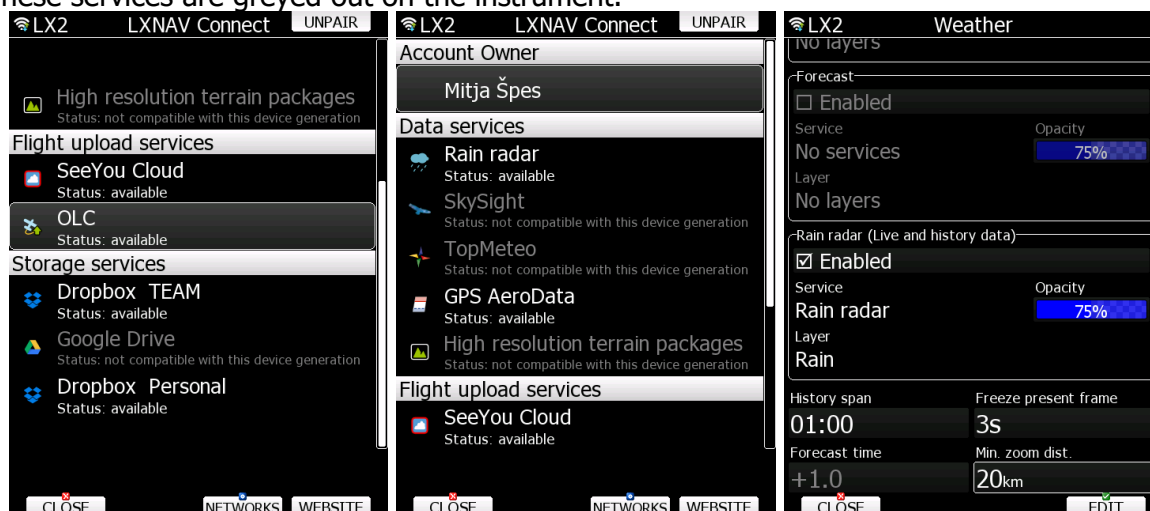
#### 5.1.10.4 LXNAV Connect Limitations

LX800 Generation 1 does not support a Wi-Fi module, therefore LXNAV Connect is not available.

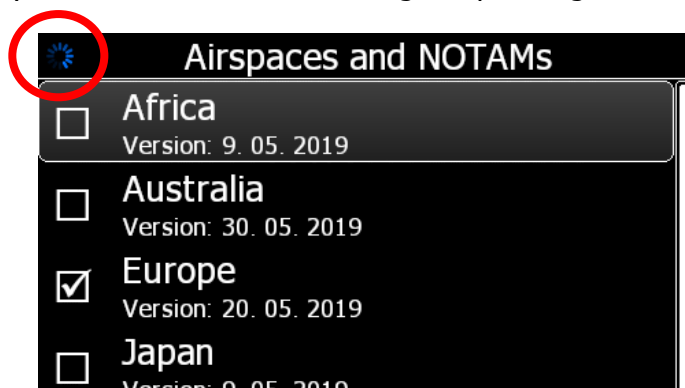
LX800 and LX900 Generation 2 supports a Wi-Fi module, but there are some limitations. The following services are not available:

- SkySight
- TopMeteo
- High resolution terrain packages
- Google Drive
- Satellite pictures

These services are greyed out on the instrument.



Based on your Internet connection speed it might take some time to load functions or data. A blue icon will appear in the upper left corner of the screen whenever your device is still downloading or uploading data.



### 5.1.11 Language

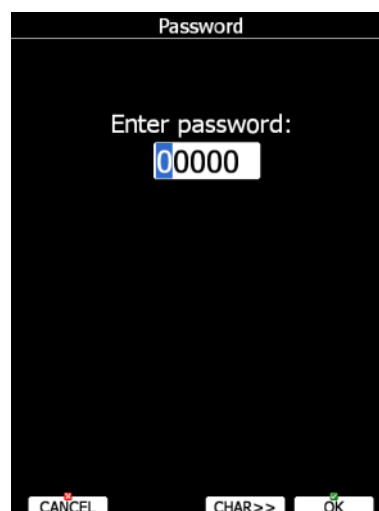
The system can operate in a number of different languages.



Select the desired language. The main display unit will reload and restart in the new language. If your language is not listed and you feel able to become a translator for the system, please do not hesitate to contact us.

Currently available languages are: Czech, German, English, Spanish, French, Italian, Dutch, Polish, Slovenian, Finnish and Russian.

### 5.1.12 Passwords



- **89891** is used to initiate the firmware update procedure.
- **89892** is used to update peripheral devices
- **00111** display information about the system and its sensors.
- **42000** update of FLARM through PC port (default).
- **44441** shows debug information.
- **00112** will perform integrity check of stored maps and terrain data
- **01043** will perform "Auto zero" and set indicated speed to zero.
- **01049** will perform "Auto zero" and set indicated speed to zero for OLD LCD varios.
- **09908** compass calibration process (factory and user calibration).
- **30000** browse through installed files (use with caution).
- **31000** browse SD card
- **32000** browse USB drive

- **99999** will erase all flights stored on the main display unit.
- **55556** will enable Condor simulator input via the PC port.
- **02000** toggle support for USB AHRS module.
- **43001** toggle 485bus logger.
- **44440** enter continuous grab mode.
- **01044** enable or disable automatic auto zero of speed sensor at end of flight.
- **33333** reset recorded min/max temperature.
- **89892** device firmware updates
- **41000** first or forced update of FLARM.
- **42001** Flarm reset
- **33400** shows menu with all above passwords

### 5.1.13 Admin Mode

Admin mode is very powerful tool to disable functionality of the system for normal users. It is designed for club usage where one person is taking care of all instruments.

To enable Administration mode, check the **Enable admin mode** box. The next step is to enter and re-enter the administration password. Once the password is entered it is possible to define which actions a normal user can perform. **Use single layout** will use Graphical LAYOUT (navboxes etc.) settings only from the selected active profile. If you change/activate any other profile, the settings – layout will remain from the active one.

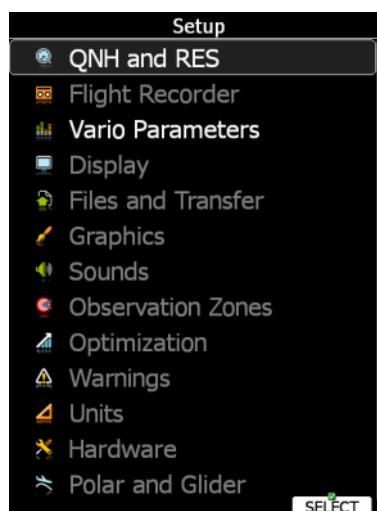
The image shows two side-by-side screenshots of the 'Admin Mode' configuration screen. Both screens have a title bar 'Admin Mode'.  
 Left screenshot: The 'Enable admin mode' checkbox is unchecked. Below it, the 'Admin login' section has 'Password:' and 'Repeat password:' fields, both empty. The 'Use single layout' dropdown is set to 'OFF'. The 'Users can' section has a list of permissions, all of which are checked: 'Change Safety Altitude', 'Change Report Point', 'Change Wind Methods', 'Change Page Layout', 'Change Flarm Target', 'Use Flight Recorder menu', 'Use Display menu', and 'Use Files and Transfer menu'. At the bottom are 'CLOSE' and 'EDIT' buttons.  
 Right screenshot: The 'Enable admin mode' checkbox is checked. The 'Admin login' section has 'Password:' and 'Repeat password:' fields, both containing 'Bc'. The 'Use single layout' dropdown is set to 'OFF'. The 'Users can' section has a list of permissions, all of which are unchecked: 'Change Safety Altitude', 'Change Report Point', 'Change Wind Methods', 'Change Page Style', 'Change Flarm Target', 'Use Flight Recorder menu', 'Use Display menu', 'Use Files and Transfer menu', '— Select Airspace file', and '—— Modify Airspace'. At the bottom are 'CLOSE' and 'EDIT' buttons.

There are several actions, which can be disabled for normal user:

- **Change Safety Altitude**, user will not be able to set the safety altitude.
- **Change Report Point**, user will not be able to set report point, if it is already set.
- **Change Wind Methods**, user will not be able to change methods for wind calculation.
- **Change Page Style**, it is not possible to change page layout.
- **Change Flarm Target**, user cannot change FLARM targets names and other data for it.
- **Use Flight Recorder menu**, user cannot modify flight recorder properties.
- **Use Display menu**, user cannot modify display properties.
- **Use Files and Transfer menu**, it is not possible to use the entire files and transfer menu.
- **Select Airspace file**, user cannot select and modify airspaces at all.
- **Modify Airspace**, user can select different airspace file, but he cannot edit or delete it.
- **Select Airport file**, user cannot select and modify airports.
- **Select Waypoints file**, user cannot select and modify waypoint files.
- **Modify Waypoints**, user can select, but cannot delete, waypoint file.

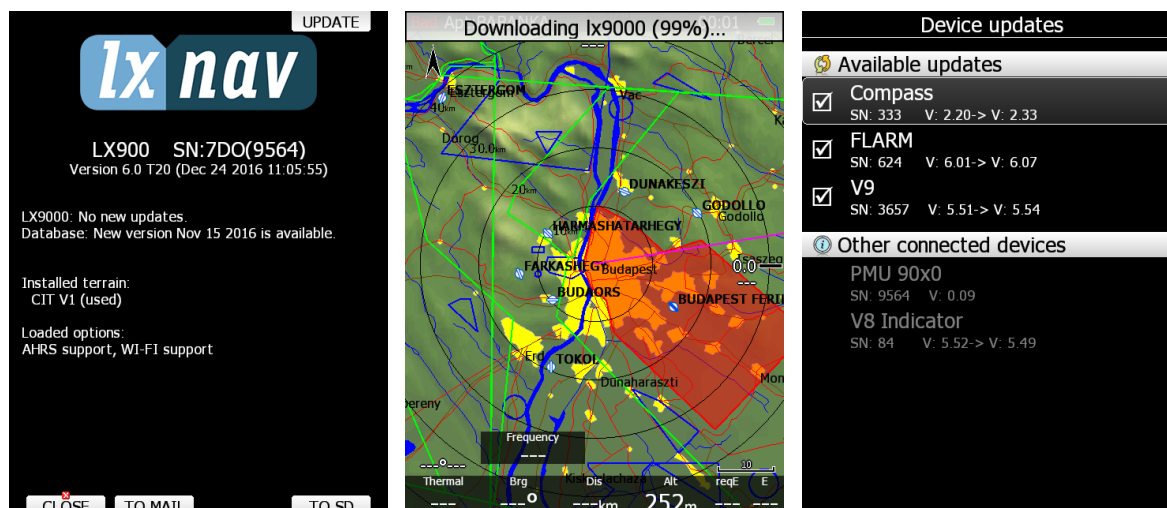
- **Select Raster maps**, user cannot select and modify scanned maps.
- **Modify Raster maps**, user can select, but not modify scanned maps.
- **Format SD Card**, user cannot format SD card.
- **Update Databases**, user cannot update databases.
- **Modify PDFs**, user cannot delete stored PDF documents.
- **Delete Flight**, user cannot delete stored flight.
- **Use Graphics menu**, cannot use this menu.
- **Use Sounds menu**, cannot use this menu.
- **Use Observation Zones menu**, cannot use this menu.
- **Use Optimization menu**, cannot use this menu.
- **Use Warnings menu**, cannot use this menu.
- **Use Units menu**, cannot use this menu.
- **Use Hardware menu**, cannot use this menu completely.
- **Use NMEA output menu**, user cannot use this menu.
- **Use Polar menu**, user cannot modify any glider parameters
- **Use Profiles menu**, user cannot modify Profiles at all. He can change the profile only by restarting the device.
- **Modify Profiles**, user cannot delete, edit or lock a profile.
- **Use Language menu**, user cannot use this menu.
- **Use Passwords menu**, user cannot use this menu.

Once actions are selected and admin mode is closed, a user will observe any un-selected items greyed-out.



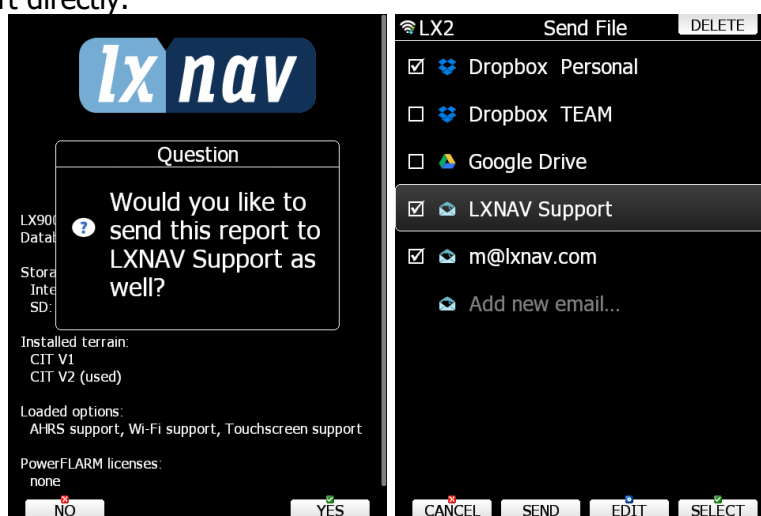
### 5.1.14 About

The About dialogue show serial number, software version, installed terrain, software options and update status (if the Wi-Fi module is installed). Use this menu whenever you are experienced a problem with the system. The UPDATE button will give an option to update the system to the latest version.



### 5.1.14.1 Debug Report

If a SD card is inserted into the main display unit the TO SD button will be shown. Press TO SD and a debug report will be saved to the SD card. A report will have a name similar to »debug\_20140216\_14\_21\_28.report«. Please email this report to us for further help. If a network connection is available you can also use the function TO MAIL, which will send the Debug report to email, or even more, you will be asked if you would like to send this report to LXNAV support directly.

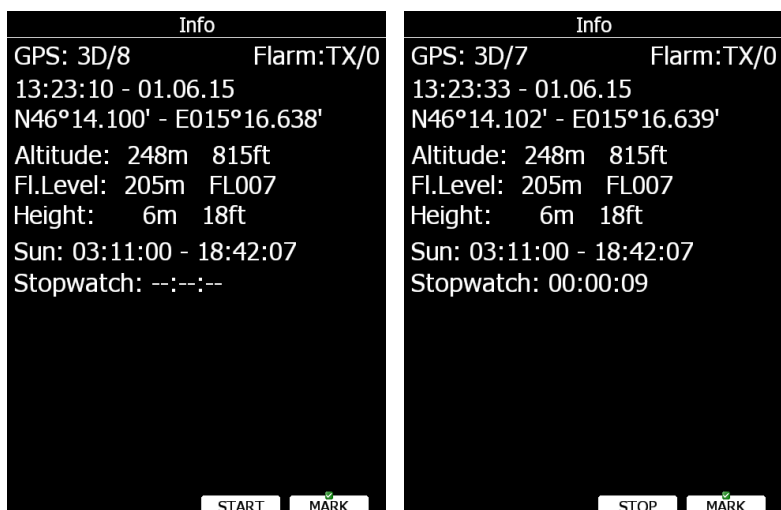


## 5.2 Information Mode

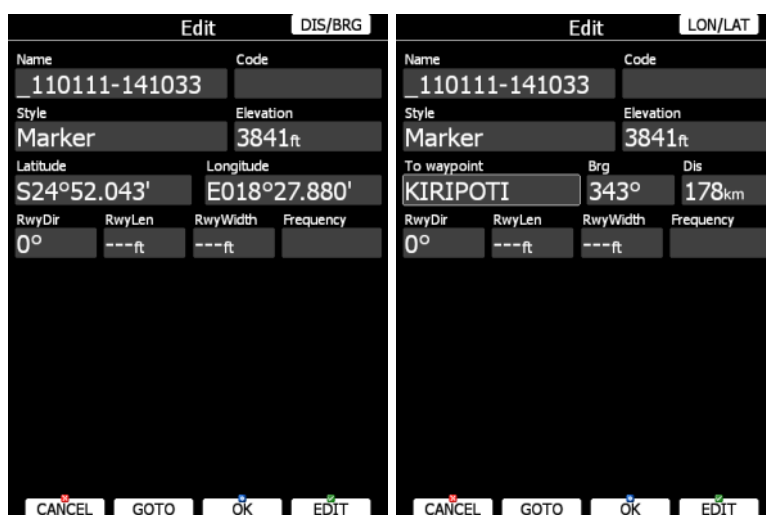
Information mode comprises four pages; GPS status page, position report page, satellite sky view page and network status page. Use the PAGE selector knob or the up/down arrow to toggle pages.

### 5.2.1 GPS Status Page

GPS status, altitude, flight level and height are shown on this page. Sunrise and sunset are calculated for the current position. In the upper-right corner the current FLARM status is shown. TX means FLARM is transmitting data to others and the number indicates how many other FLARM devices are within range.



Press the **START** button to start the stopwatch. Press the **STOP** button to stop the stopwatch. If you press the **MARK** button a new waypoint will be created with the current latitude, longitude and elevation based on the terrain database. The waypoint name is generated from the current date and time separated by the minus character and is preceded by an underscore.



Waypoint data can be modified. Refer to Section 5.6.1 for more details. Press the **OK** button to save a marked waypoint or press **CANCEL** to exit without saving. Press the **GOTO** button to navigate immediately to the selected point.



### 5.2.2 Position Report

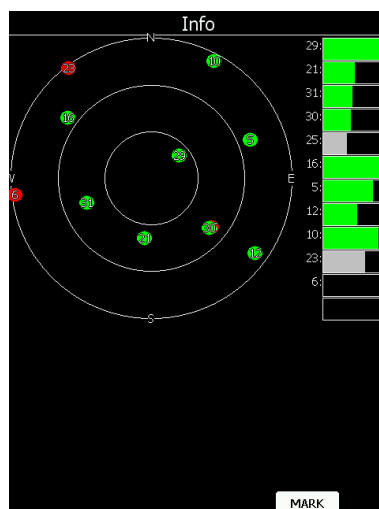
This page shows your position report relative to an arbitrary selectable point. Use this page when you are talking to ATC.



Press the **REPORT** button to select a report point. Radials will always be magnetic and the distance will always be in nautical miles. If you press the **MARK** button a new waypoint will be created.

### 5.2.3 Satellite Sky View

Information about tracked satellites is given on this page. If no satellite information is available a message "*No satellite info*" is displayed.



Green satellites are satellites currently being used for position determination. Three concentric circles represent satellite elevation (0, 30, 60 degrees above horizon). If a satellite is in the center of the circles it is directly overhead.

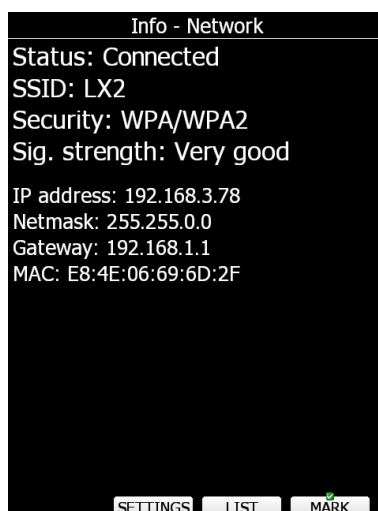
When you are experiencing bad satellite reception check this page. If the satellites are always red in a particular place, you should consider moving the GPS antenna to another position. If you press the **MARK** button a new waypoint will be created.



With some instruments the above page is not visible

### 5.2.4 Network Status

Network status information is given on this page. Press the **LIST** button to list available networks. Press the **SETTINGS** button to set up network properties. See also Section **Napaka! Vira sklicevanja ni bilo mogoče najti..**



### 5.3 Near Mode

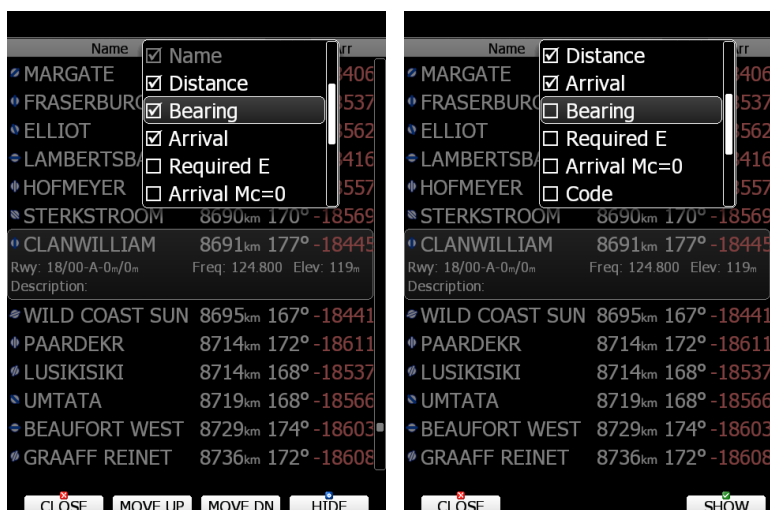
A list of all landable waypoints and airports is shown in this mode. The default sorting order of the items is by arrival altitude. Press the **SORT** button to toggle the sort method. The selected sort method is indicated by the grey background in the header.

Near				
Name	Dis.	Brg	Arr	
BUDAORS	9.49km	229°	-354m	
DUNAKESZI	13.4km	22°	-455m	
HARMASHATARHE	9.52km	302°	-526m	
BUDAPEST FERIH	15.4km	118°	-534m	
FARKASHEGY	13.1km	262°	-536m	
TOKOL	19.3km	202°	-583m	
GODOLLO	19.7km	63°	-711m	
ESZTERGOM	38.7km	317°	-1093m	
KECSKED	56.9km	271°	-1634m	
KECSKEMET	82.7km	141°	-2245m	
MATKOPUSZTA	88.8km	149°	-2400m	
JAKABSZALLAS	93.1km	154°	-2512m	
SZOLNOK	97.1km	115°	-2595m	
GYOR-PER	96.4km	278°	-2614m	
SZENTKIRALYSZA	96.6km	240°	-2771m	
SIOFOK KILTI-SA	104km	226°	-2814m	
SORT VIEW GOTO				

Near				
Name	Dis.	Brg	Arr	
Mayerhofen	62.7km	8°	-424m	
AJDOVSCINA	64.9km	205°	75m	
SLOVENJ GRADEC	67.4km	84°	-494m	
SENTVID	70.6km	137°	-374m	
POSTOJNA	74.0km	182°	-608m	
GORIZIA	76.2km	221°	-133m	
CELJE	78.0km	104°	-530m	
Rwy: 11/29-G-900-/0m Freq: 128.800 Elev: 244m Description: Tel. +386 3 5472030.				
xMurau	77.9km	358°	-934m	
xLendorf	78.5km	306°	-692m	
xJenig	79.5km	286°	-907m	
xMadlig	79.9km	334°	-1173m	
DIVACA KRASKI	83.7km	192°	-745m	
xSchoeder	85.8km	353°	-1218m	
TRIESTE RONCHI	88.8km	222°	-398m	
SORT FREQ VIEW GOTO				

Press the **VIEW** button to change how much detail is visible for a selected item.

In the **VIEW** mode you can define how columns order and which columns you would like to see.



Select the preferred landable location via the PAGE selector knob and press the **GOTO** button. It will automatically change to airport mode and navigation will commence to the selected point.

Duplicates are automatically removed. If a target with nearly the same latitude and longitude is found within both the distributed airports database and user waypoint file, then only the target from the user waypoint file will be displayed. Press the **FREQ** button to set the standby frequency if this option is available (if a radio bridge is present).

Near			
Name	Dis.	Brg	Arr
✦ xFederaun	17.9km	302°	1038m
Rwy: 09/27-O-400m Description: N Autobahn			
✦ 0Lesce	18.8km	135°	925m
✦ Borovlje	25.9km	77°	836m
✦ Feldkirchen	25.9km	12°	840m
✦ Celovec	31.3km	55°	738m
✦ Noetsch	30.7km	291°	670m
✦ xPaternion	39.1km	314°	531m
✦ Bovec	38.4km	244°	502m
✦ xST.DONATH	42.4km	46°	388m
✦ xEisenkappel	44.5km	86°	275m
✦ Brnik	45.2km	129°	291m
✦ xFeffernitz	33.9km	314°	165m
✦ Friesach	59.4km	33°	-83m
✦ xLendorf	59.4km	311°	-45m

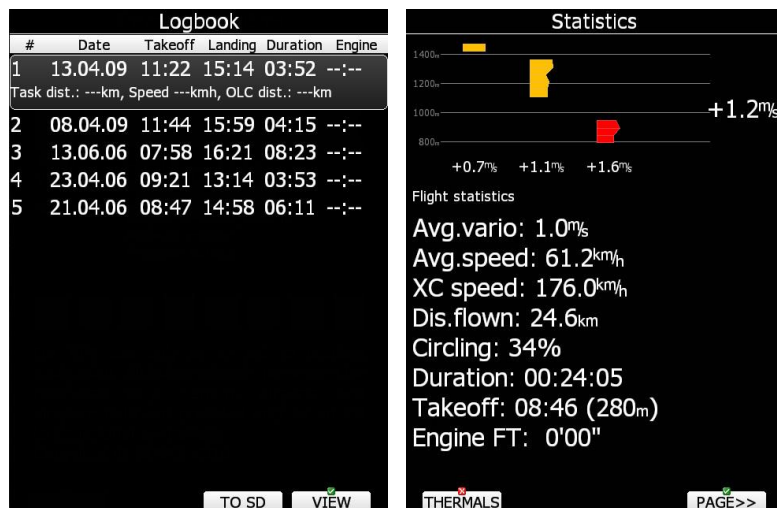


A small rectangle in bottom right corner of point icons indicates that there are images available for the selected point.

A red cross is drawn over an icon, when the length or width of the landing point is smaller than that defined in Setup. See also Section 5.1.5.4

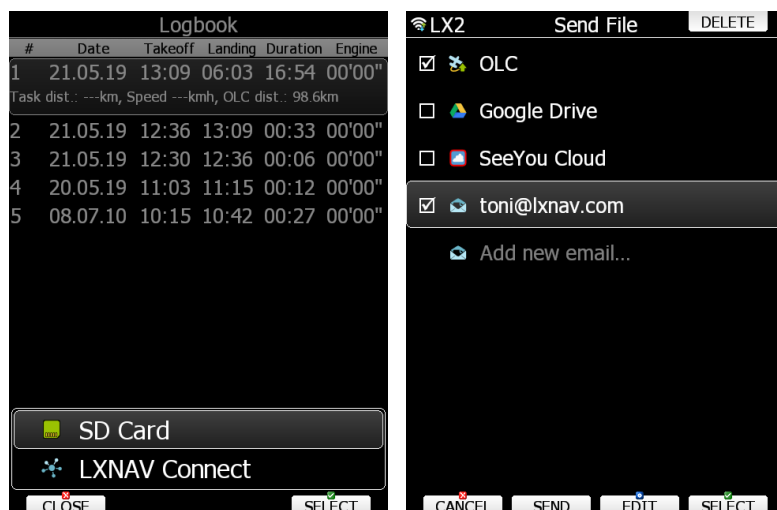
## 5.4 Statistics Mode

The Statistics mode operates in two different ways. During flight statistical data for the current flight is shown whilst on the ground the logbook for all stored flights is displayed.



### 5.4.1 Logbook

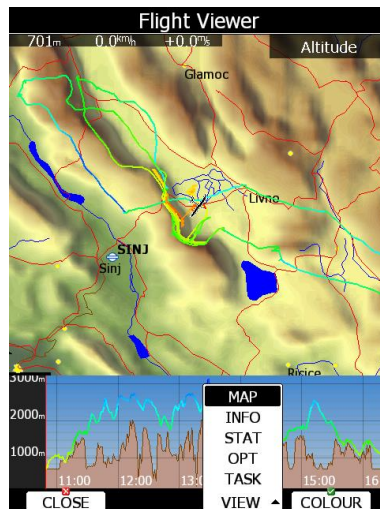
If a SD card or USB stick is inserted into the main display unit, the user can copy a selected flight to it. Select the desired flight using the PAGE selector knob and then press the appropriate button. Press the **SAVE** button to save a flight to SD or LXNAV Connect. If a SD card is not present the button TO LC will appear (if system has a Wi-Fi module).



A flight is automatically copied to the SD card and/or USB stick if it has been inserted into the main display unit by the time the message *"Calculating security"* is displayed. This message appears when landing conditions are met.

You can also delete a flight using the **Files and Transfer** menu (see Section 5.1.4.7).

Press the **VIEW** button to replay the flight. The flight viewer will open.



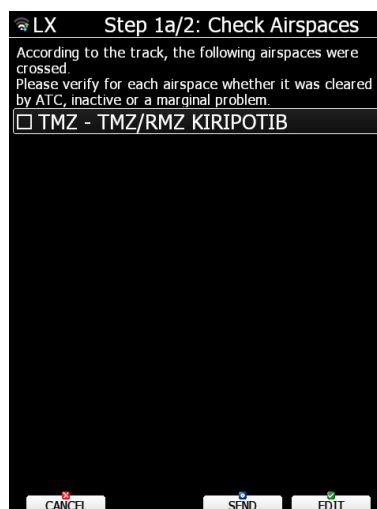
A map with the flown path is shown together with a barogram. Use the **ZOOM** selector knob to zoom in or zoom out. Use the PAGE selector knob to move through the flight. Press the **VIEW** button again to toggle between map view (date, take off, duration, soaring started), statistics (average speed/vario/altitude, maximum speed, minimum/maximum vario), optimizations (legs and distance) and route (distance, speed, route duration). On the map view you can also press **colour** to change flown path colours from altitude, ground speed to netto.

#### 5.4.1.1 Upload to OLC

A flight can be directly uploaded to the OLC by using LXNAV Connect. Login details must be entered into LXNAV Connect.

Upload your flight by: press SAVE -> LXNAV Connect -> select OLC and press SEND.

If you flew into the AIRSPACE a message of violation will appear automatically on the instrument.



In case of double seaters, a copilot's details can be entered here as well. To enter copilot's birthday, use lower rotary buttons. The left button will change a day, right button a month. If you press a **YYYY** it will change from date to year. The left rotary button will change by 10 years and right rotary button by 1 year.

The glider, flight details and comment can be edited as well. At the end you have to agree with the Terms of Use and Privacy Policy from OLC.

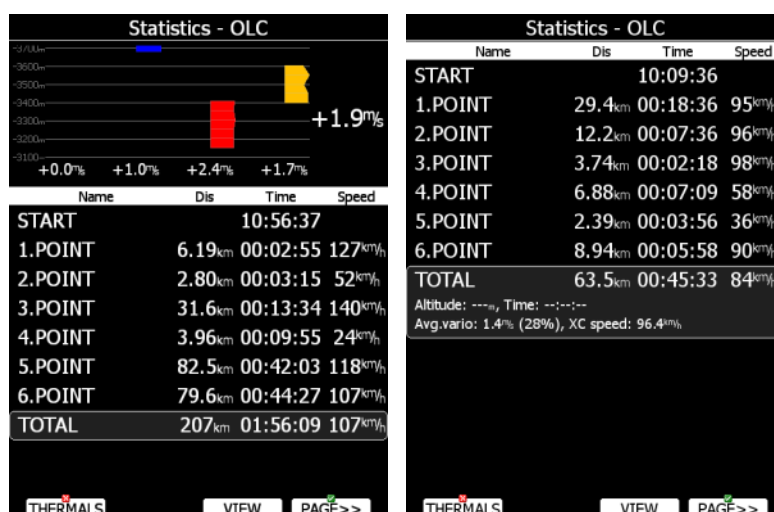
### 5.4.2 Statistics During Flight

The main statistics page is split into two parts. In the top part the last four thermals are shown. Thermal average is shown below each thermal column. Thermals are coloured based on the MacCready value. Red colour means that thermal average was 0.5 m/s or more above current MacCready setting. Blue colour means that thermal average was 0.5 m/s or less below current MacCready setting. Orange colour indicates matching thermal average.

On the left side an altitude scale is drawn. On right side the average of last four thermals is displayed.

The shape of the thermal column corresponds to the strength of the thermal at a particular altitude.

Press the **THERMALS** button to disable or enable thermals view.



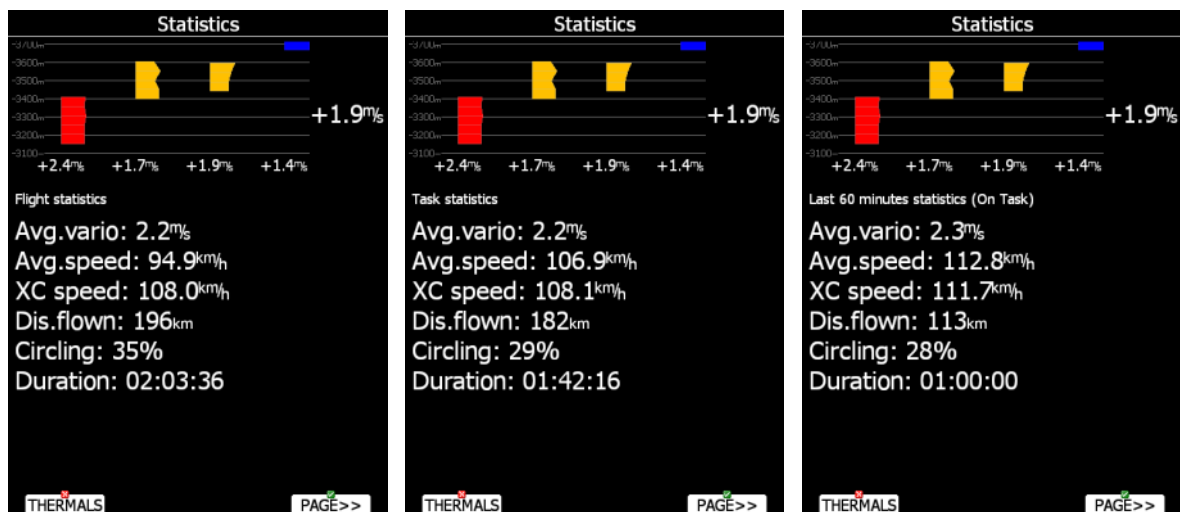
In the bottom part selected statistics are shown. There are three different pages of statistics available:

- **General statistics**, which is divided further into flight statistics, route statistics and last 60 minutes statistics.
- **Detailed route statistics** displays detailed statistics for each task set.
- **OLC statistic** shows statistics for optimized part of the flight according to the rules defined in the Optimization menu.

Use the **PAGE>>** button to toggle between different pages.

### 5.4.2.1 General Statistics

Using the PAGE selector knob the user can change the statistics subpage.

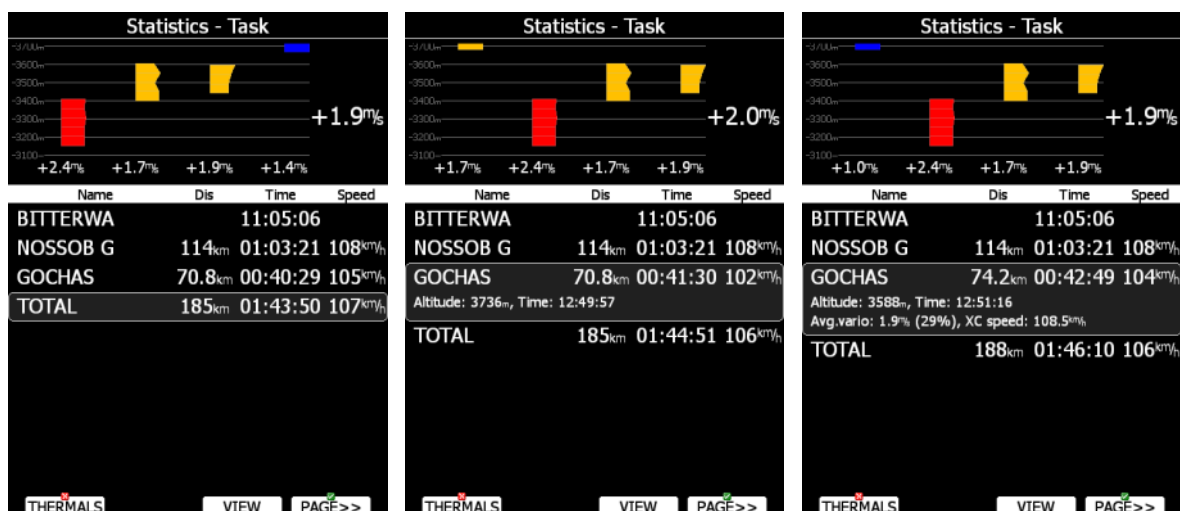


There are three subpages available:

- **Flight statistics** displays data for whole flight. **Dis.flown** is the optimised distance and XC speed is the average speed corrected for altitude difference. **Average vario** is used in this calculation.
- **Task statistics** displays data for the started task. Distance flown is the distance that has already been flown on the task.
- The **last 60 minutes** statistics displays data for the last 60 minutes of flight. If the task was started then **Dis.flown** is the distance flown on the task for the last hour otherwise it is the optimised distance. If the task distance is used a remark (On Task) is displayed in the header.

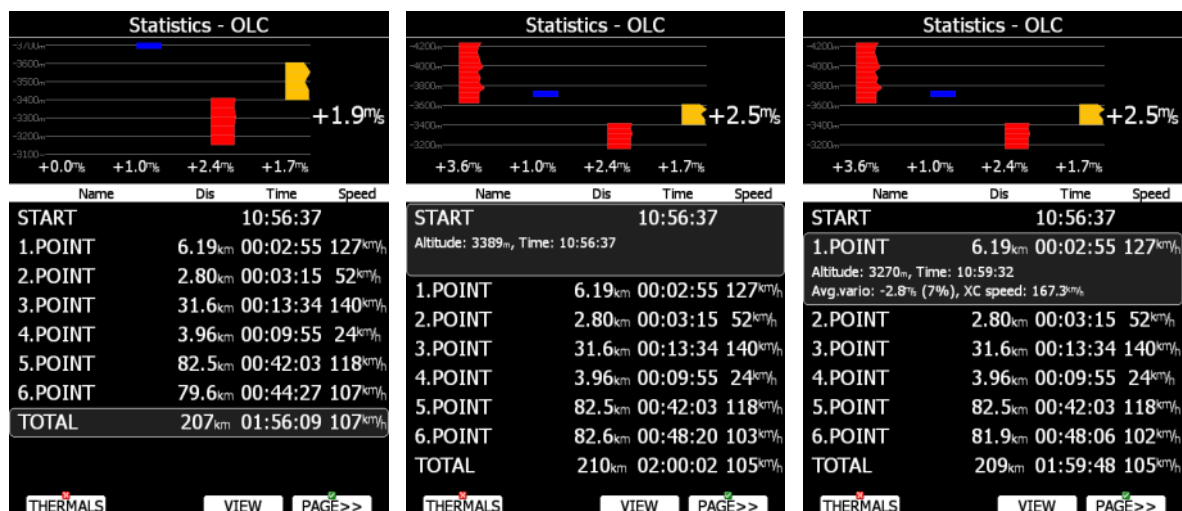
### 5.4.2.2 Detailed Task Statistics

Using the PAGE selector knob the user can select different task points. Press the **VIEW** button to show more details for a selected leg.



### 5.4.2.3 OLC Statistics

Using the PAGE selector knob the user can select different optimized points. Press the **VIEW** button to show more details for a selected optimized leg.





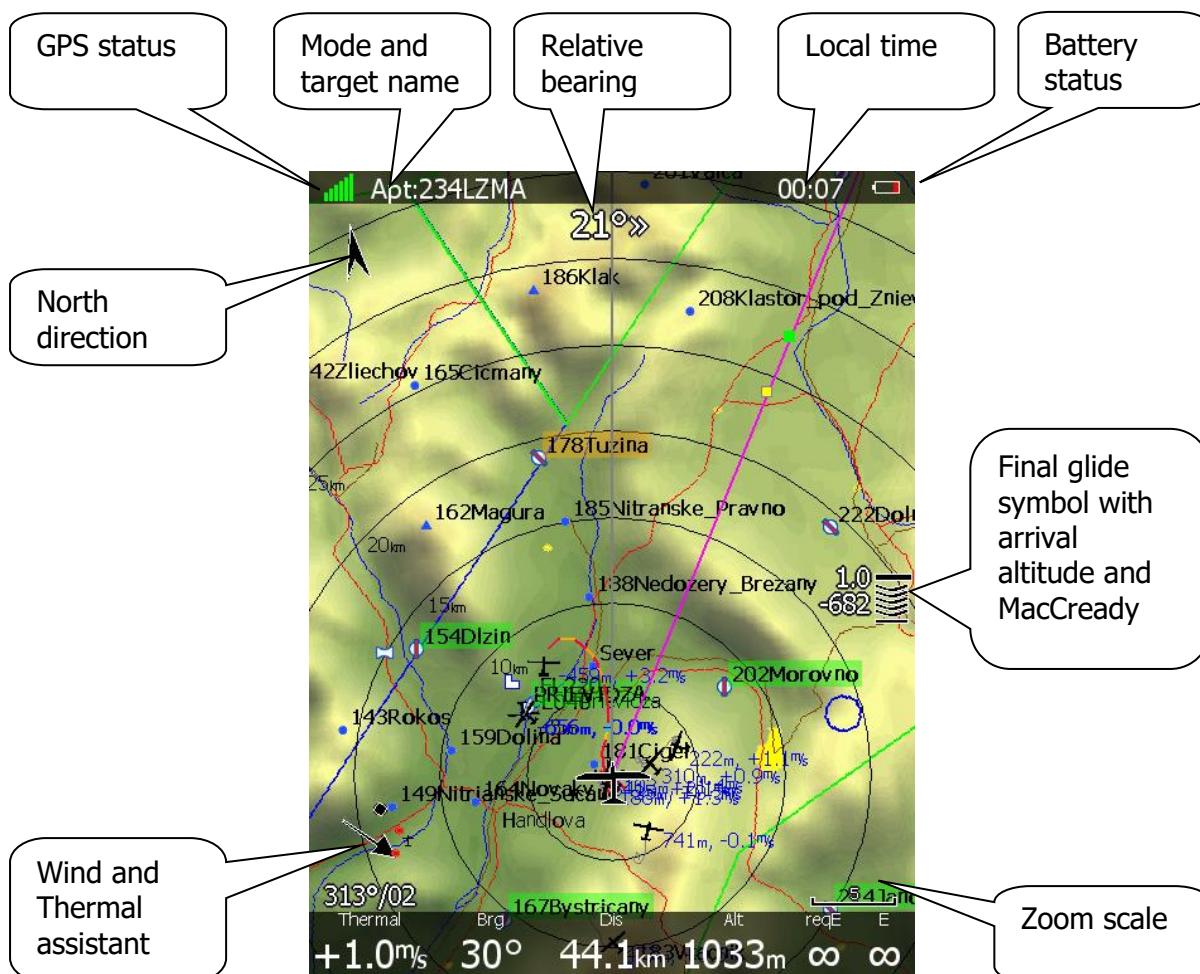
## 5.5 Navigation Mode

Using the PAGE selector knob, you can scroll through the pages. There are several navigational pages available.



Navigational pages can be customized using LX Styler. The description below applies to the default navigational pages.

### 5.5.1 Initial Navigation Page



In the top row the GPS status is shown. Green colour represents GPS 3D, yellow colour means GPS 2D and red colour is GPS bad. The number of coloured bars indicates the number of visible satellites. Each bar represents two satellites.

Local time shows the local time. You can set a different time zone in the **Units** dialogue (see Section 5.1.7).

The battery symbol indicates the status of the battery. When the battery is very low the symbol will turn red and also the **Low battery** warning will be displayed.

North direction is pointing to true north. This is important if the map orientation is not north up at the top.

The airplane symbol in the middle of the screen shows the current position. The grey line indicates the current ground track and the magenta line is connecting the airplane position to the selected goal. When the glider is below the glide-path to the current goal a green and a yellow rectangle will be displayed on the magenta line. The green rectangle

represents the position from where you will achieve the final glide with current altitude and current MacCready setting. The yellow rectangle represents the position from where you will achieve the final glide with current altitude and MacCready zero.

The relative bearing (near the top) gives advice on which direction and how much to turn in order to fly towards the selected target. In the above example we should turn right 21°.

In the lower-left corner of the screen a **wind symbol with Thermal assistant** is displayed. The thermal assistant continuously analyses the thermal whilst circling. The sizes of the dots indicate the strength of the thermal. The arrow indicates the wind direction relative to the map orientation. Wind direction and wind speed are presented numerically below the arrow.

The **final glide symbol** is a complex symbol. The bottom number shows your predicted arrival altitude. Negative numbers indicate that you are below the glide path and positive numbers indicates you are above the glide path. The middle number is the current MacCready setting.

The **Zoom scale** is displayed in the bottom-right corner of the screen. A distance corresponding to the zoom symbol is plotted above the scale. If there is a letter "a" next to the distance scale it means that the scale of map will automatically adapt to the goal.

In the bottom row several items are displayed: **Thermal** shows the last thermal average, **Brg** is the bearing to the selected target, **Dis** is the distance to the target and **Alt** is the current MSL altitude.

The last two numbers (**reqE** and **E**) show the required glide ratio to the target. In the above example the required glide ratio is infinitive and current glide ratio is also infinitive. The current glide ratio is calculated over the last three minutes of flight.

### 5.5.2 Second Navigation Page

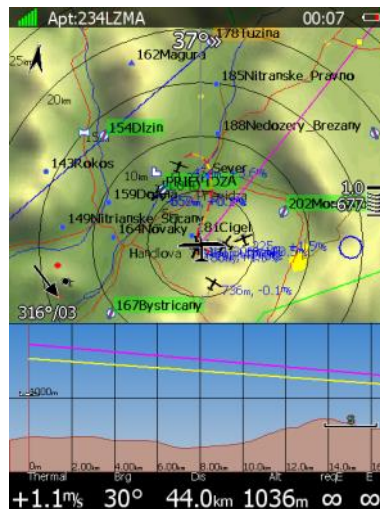
The second page is similar to the first page with additional data shown in the bottom line.



The additional items are the current net vertical speed, current track, ground speed, height above ground and optimised distance.

### 5.5.3 Third Navigation Page

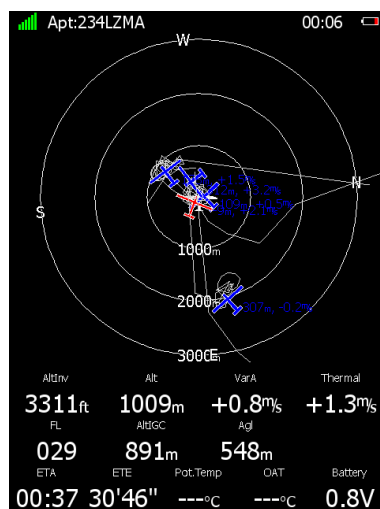
The third page is a combination of first navigational page and side view.



The side view is showing the lateral view from the glider towards the selected goal. Terrain below the glider is displayed including glider projected track in grey colour based on the glide ratio. Magenta line is showing the requested glide ratio to goal.

### 5.5.4 Fourth Navigation Page

The fourth navigational page is combination of FLARM radar screen and some additional altitude data.



The internal pressure sensor altitude is shown as **AltIGC**. **AltInv** shows the altitude in opposite units to those defined in the **Units** setup. **Potential Temperature** is the temperature calculated to mean sea level and can be helpful with identifying if there is enough heat to trigger thermals and how strong they might be. **Battery** displays the current voltage. The estimated time of arrival and estimated time established are displayed at the bottom part of page.

### 5.5.5 Fifth Navigation Page

On this page images of the selected airport are shown if available.

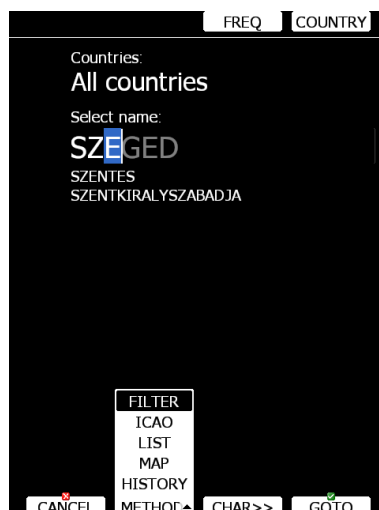


Additionally, information for the selected airport is shown at the bottom part. This information includes airport frequency, runway info and description. The estimated time of arrival, estimated time established and sunrise/sunset times for the selected target are displayed in the bottom row.

### 5.5.6 Button actions Related Only to the Nav Page

#### 5.5.6.1 Select an Airport

There are five different methods of selecting an airport. They are called **filter** mode, **ICAO** mode, **list** mode, **map** mode and **history** mode. The user can toggle between these five modes by first pressing the **select** button, then pressing the **METHOD** button several times to select the preferred mode.



#### Filter mode

Selecting an airport in filter mode is straightforward. Enter the first letter of the airport name using the PAGE selector knob. The helper will show the first airport matching this letter and the next few airports will be displayed in lower part of screen.



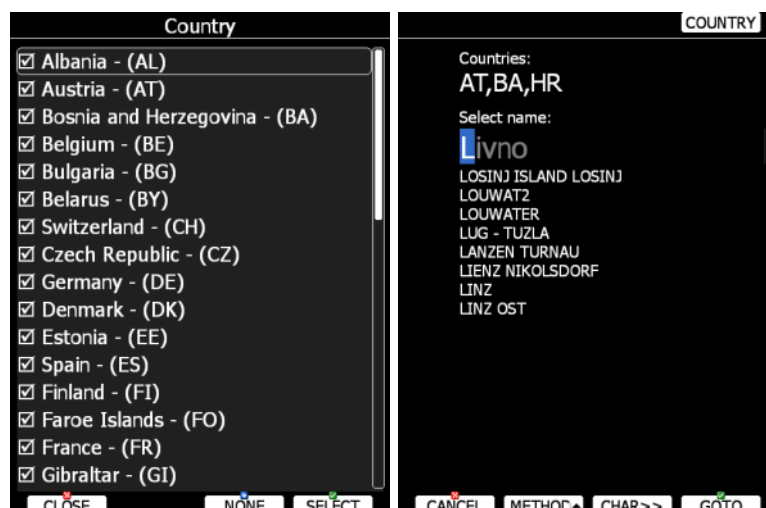
Press the **CHAR>>** button and the cursor will move to the second letter. Use the PAGE selector knob to select the second letter. If you wish to return to the first letter turn the ZOOM selector knob counter-clockwise.

You will note that part of the airport name is written in a darker colour. Once it becomes white it means this is the only selection. Pressing **GOTO** will navigate directly to it. If there are more than one airports starting with the filtered letters and you press the **GOTO** button the cursor will jump to the beginning of the airport name. The PAGE selector knob will select among the airports. Press **GOTO** once more and you will navigate to it.



If you do not know the exact name of an airport just select the first letter and press the **GOTO** button. Now scroll to the desired airport using the PAGE selector knob. Press the **GOTO** button once more and you will navigate to the selected airport.

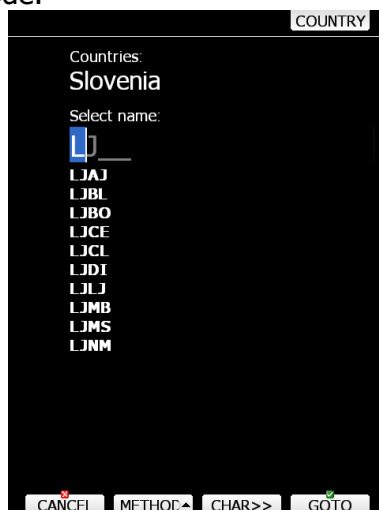
By default, the main display unit will search airports through all countries. It is possible to create a search only from selected countries. Press the **COUNTRY** button and a dialogue with a list of all available countries will be shown.



Select the desired countries and press **CLOSE**.

## ICAO mode

In this mode airports are selected by ICAO identifier rather than by name. Operation is exactly the same as in filter mode.



## List mode

In list mode airports are listed as in near mode.

VIEW	COUNTRY
Name	Dis. Brg Arr
Livno	6.05km 48° -115m
VISOKO	106km 73° -3567m
SARAJEVO	119km 85° -4114m
CILJUGE	165km 62° -5533m
TUZLA	169km 61° -5693m
LUG - TUZLA	176km 62° -5963m
POPOVI	225km 59° -7643m
OSIJEK CEPIN	244km 34° -8287m
OSIJEK KLISA	245km 38° -8353m
BEOGRAD	300km 65° -10418m
SZEGED	377km 41° -13226m
VRSAC	387km 64° -13630m
JAKABSZALLAS	397km 32° -13960m
MATKOPUSZTA	405km 32° -14278m
SZENTES	416km 39° -14667m

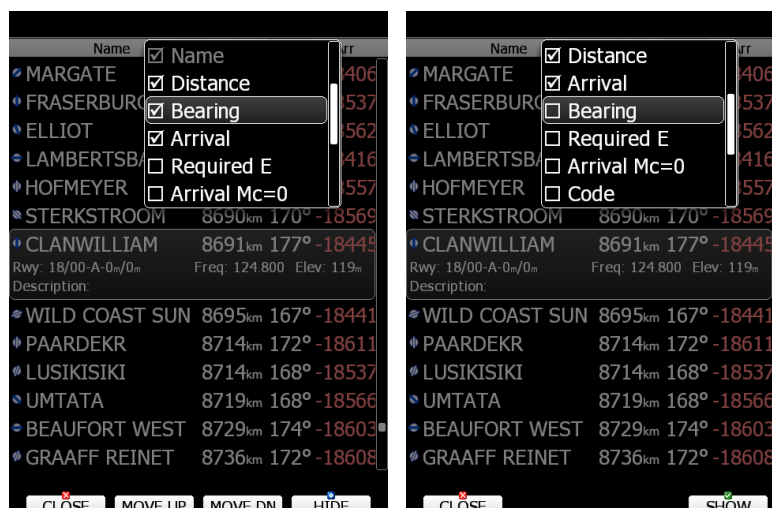
  

VIEW	COUNTRY
Name	Dis. Brg Arr
Livno	5.77km 51° -151m
SINJ	15.5km 244° -50m
SPLIT KASTELA	51.0km 241° -999m
BRAC BRAC ISLAN	54.5km 194° -1660m
HVAR	66.6km 195° -1557m
PLOCE	92.9km 149° -2550m
MOSTAR	96.4km 123° -2789m
VISOKO	106km 73° -3630m
SARAJEVO	119km 86° -4181m
UDBINA	123km 316° -4347m
ZALUZANI-BANJA	125km 13° -3968m
ZADAR ZEMUNIK	127km 288° -3743m
BANJA LUKA	136km 15° -4371m
URDJE - PRIJEDOR	137km 356° -4403m

VIEW	COUNTRY
Name	Dis. Brg Arr
Livno	5.64km 49° -172m
SINJ	15.6km 245° -82m
SPLIT KASTELA	51.1km 241° -1029m
BRAC BRAC ISLAN	54.5km 195° -1685m
HVAR	66.6km 195° -1582m
PLOCE	92.7km 149° -2571m
MOSTAR	96.1km 123° -2809m
VISOKO	106km 73° -3651m
SARAJEVO	119km 86° -4201m
UDBINA	123km 316° -4378m
ZALUZANI-BANJA	125km 13° -3995m
ZADAR ZEMUNIK	127km 288° -3774m
BANJA LUKA	136km 14° -4398m

Press the **VIEW** button to change details of the selected airport. In the **VIEW** mode you can define how columns order and which columns you would like to see.

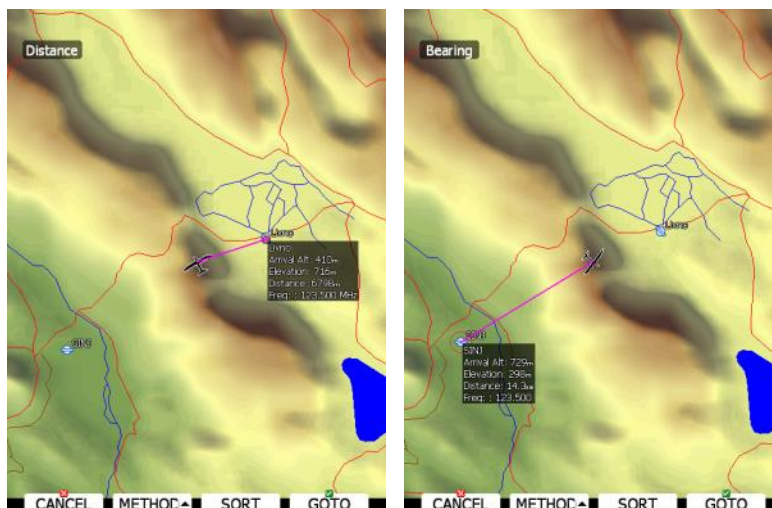




Press the **SORT** button to change the sort order of the airports. Select an airport using the PAGE selector knob. Press **GOTO** and you will navigate to it. Press the **COUNTRY** button and a dialogue window with a list of all available countries will pop up.

### Map mode

In map mode, airports are selected directly on the map. Rotate the PAGE selector knob to select an airport.



Details of the selected airport will be drawn next to it. In the upper-left corner of the screen current sort method is shown. There are two possibilities: distance sort or bearing sort. Press the **SORT** button to change it.

### History mode

History mode shows all previously selected airports and additional two points: take-off location and soaring begin location (not shown on picture below).

Name	Dis.	Brg	Arr
• DIVACA KRASKI UI311	11km	314°	-5688m
• PLOCE	92.6km	149°	-1108m
• UDBINA	123km	316°	-2427m
• Livno	5.95km	48°	-156m
• Take-off location	6.17km	42°	-152m

Use the PAGE selector knob to select the desired airport. Press **GOTO** to start navigation to it.



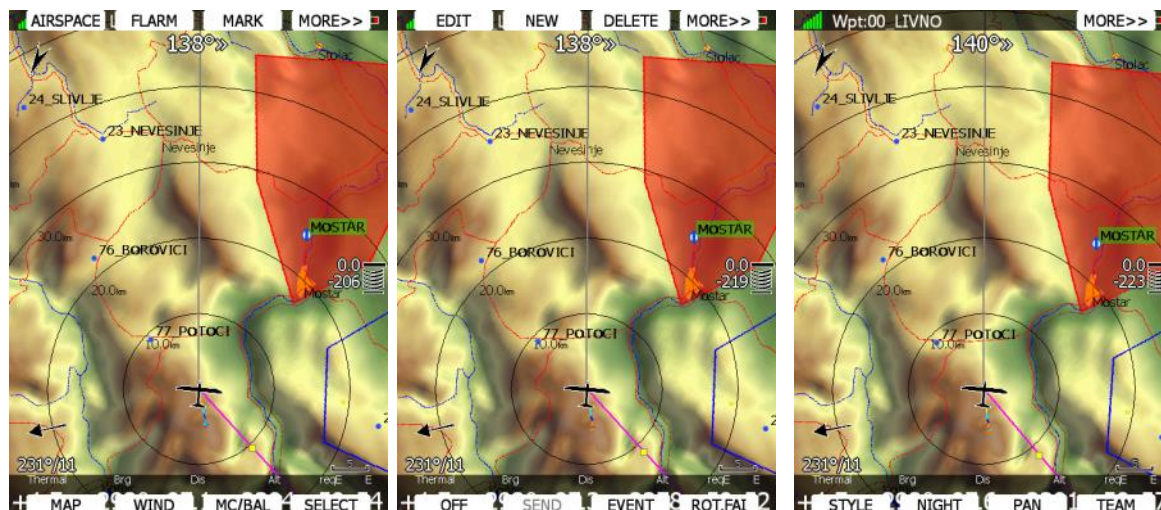
If you are flying a free cross-country flight and you wish to finish it under the OLC rules, you can select a waypoint called Soaring Start, which will show you where to finish the task.

## 5.6 Waypoint Mode

Waypoint mode is very similar to airport mode. In this mode the user can navigate to waypoints from selected files. In addition to the options in airport mode there are three additional options: Edit waypoint, new waypoint and delete waypoint.



Navigational pages can be customized using LX Styler. The description below applies to the default navigational pages.



### 5.6.1 Button Actions Related Only to The WPT Page

#### 5.6.1.1 Editing Waypoints

Press the **EDIT** button. The Edit dialogue will be open with details of the selected waypoint.

Edit				DIS/BRG
Name		Code		
00 LIVNO		00		
Style		Elevation		
Grass airfield		707m		
Latitude		Longitude		
N43°47.650'		E016°53.533'		
RwyDir	RwyLen	RwyWidth	Frequency	
130°	800m	---m		
<div> <span>CANCEL</span> <span>GOTO</span> <span>OK</span> <span>EDIT</span> </div>				

There are two possibilities to enter a position. You can modify latitude and longitude to define a position of the point or press the **DIS/BRG** button to enter the position as distance and bearing to a selectable point.



Edit		LON/LAT	
Name	Code		
00 LIVNO	00		
Style	Elevation		
Grass airfield	707m		
To waypoint	Brg	Dis	
00 LIVNO	0°	0.00km	
RwyDir	RwyLen	RwyWidth	Frequency
130°	800m	---m	

CANCEL GOTO OK EDIT

Press the **LON/LAT** button to toggle back to input of latitude and longitude. Modify other attributes at your discretion. When finished, press the **OK** button to confirm changes or press **CANCEL** to dismiss changes. The modified waypoint will be automatically updated in the appropriate file.

### 5.6.1.2 New Waypoint

Select this option if you want to add new a waypoint to the active waypoints file. If no waypoint file is selected a new waypoint file will be created with name **default.cup**. A message *"Do you want to copy from airport?"* is displayed first. Press **YES** if you would like to copy it from the Airports database. An airport select dialogue will be opened. Select the airport you wish to copy. If none is selected a blank edit dialogue is opened.

Wpt:00 LIVNO 12:37

117°»

Question

Do you want to copy from airport?

NO YES

Edit LON/LAT

Name	Code		
UDBINA	LDZU		
Style	Elevation		
Grass airfield	750m		
To waypoint	Brg	Dis	
00 LIVNO	133°	123km	
RwyDir	RwyLen	RwyWidth	Frequency
125°	2750m	0m	118.200

CANCEL GOTO OK EDIT

The minimum data that must be entered are name, latitude and longitude. Press the **OK** button to confirm changes and create the new waypoint. The new waypoint is added to active waypoint file. Press the **CANCEL** button to abandon creation of new point.



Elevation will be assigned automatically once the position is entered. Elevation is taken from digital elevation model which is stored in the main display unit for the entire world.

### 5.6.1.3 Delete Waypoint

Press **DELETE** if you wish to delete a Waypoint from your list.



## 5.7 Route Mode

Route navigation mode is used for route manipulation. Navigation in this page is exclusively to the selected turn point of the declared route.



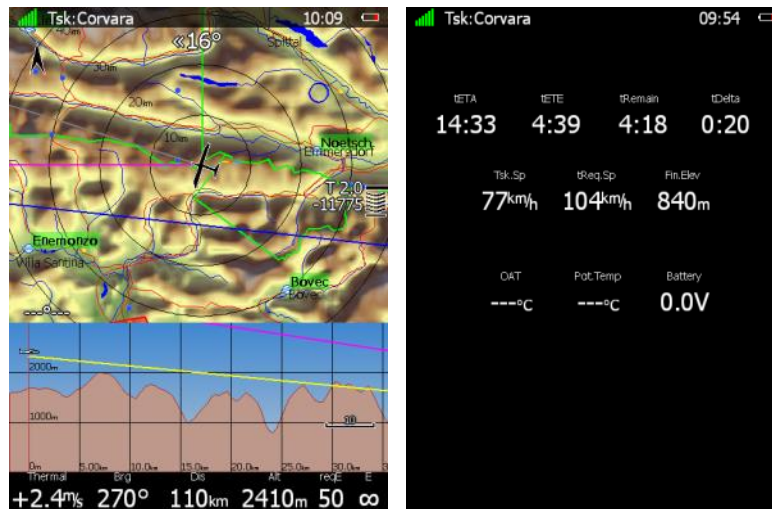
A route can be created only from stored waypoints or airports. A route can also be loaded from stored routes. A route can be saved to an active waypoint file (see Section 5.1.4.5 for details how to set an active waypoint file). A route used for navigation will also be declared in the IGC file.



Navigational pages can be customized by using LX Styler.

Route mode (valid for DEFAULT profile) has five pages. Use the PAGE selector knob to switch between pages. These pages are designed to suit the needs for routes.





The first page is identical to first pages of the airport and waypoint modes. It shows navigational data to the current turn point. However, the final glide indicator always shows the required altitude to complete the route.

On the **second page** additional data is shown:

- **current net vertical speed**
- **current track** and **groundspeed**
- **tDis** shows the remaining total route distance.
- **tskE** shows the required glide ratio to route finish.

**The third page** is identical to the fourth page of the airport or waypoint mode. It shows the side view.

**The fourth page** has no map and shows time values for the route being flown and the elevation of the finish point. In addition, outside temperature, potential temperature and battery voltage are shown.

## 5.7.1 Button Actions Related Only to the RTE Page

### 5.7.2 Route Edit

On the RTE page press the **EDIT** button and the route k edit dialogue will open. A route k is created and manipulated within this dialogue. A list of route points is shown. In the upper-left corner the type and total distance is displayed. In the upper-right corner the route time is shown (for AAT tasks). Use the PAGE selector knob to select task points or task time control.

There are numerous actions available within the task edit dialogue to make creation of routes as easy as possible.



Press the **MORE>>** button to see more options.

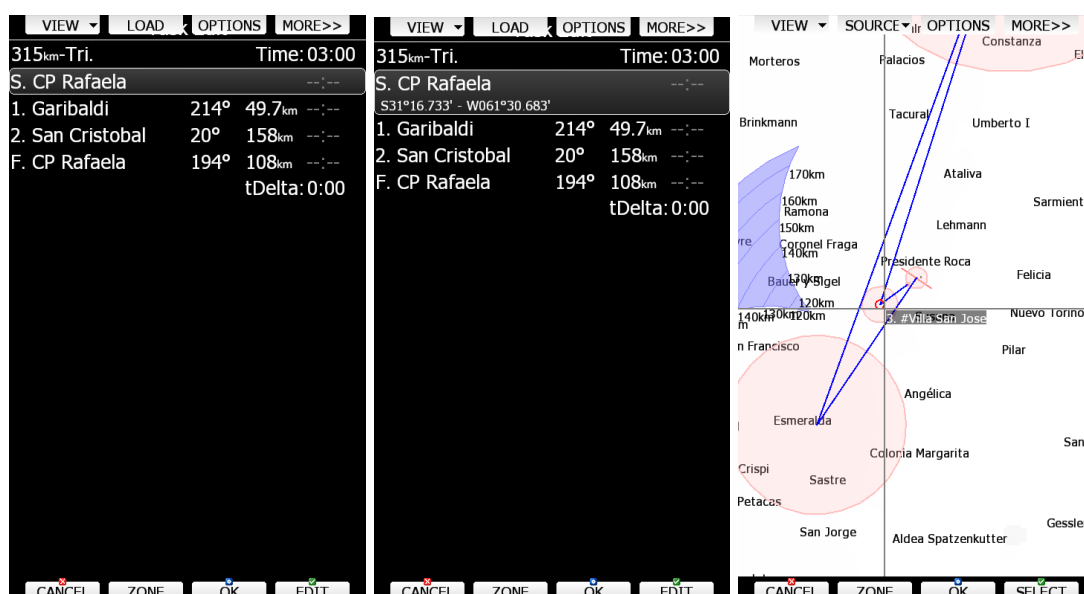
Available actions are:

- Press the **EDIT** button to enter a new route point, edit an existing one or to enter route time.
- **OK** action will confirm changes to the route and return to the navigational page.
- **CANCEL** action will cancel all modifications of the task and return to the navigational page.
- Use the **ZONE** button to modify the observation zone for selected point. The default zone style is defined in the Observation Zones menu in the setup mode (see Section **Napaka! Vira sklicevanja ni bilo mogoče najti.**).
- **OPTIONS** action will open a new dialogue where additional properties for the route can be defined. The route name is set in this dialogue.
- **VIEW** changes track creation method (see the next section for more details).
- Press the **LOAD** to load the task from the active waypoint file. You can load a route from SoaringSpot (**S.SPOT**), where you can select an actual contest.
- Press the **SAVE** button to store the route to the active waypoint file. This route can later be loaded from the active waypoint file.
- The **TO NANO** button will be available, if a Nano flight recorder is connected to the main display unit. Press this button to send the declaration to it.
- **INVERT** will invert the complete route.
- **INS PNT** will insert a new point above the current cursor position.
- **STARTS** will open new dialogue, where the user can enter multiple start points.
- **DEL PNT** will delete a point at the current position.
- **CLEAR** will completely erase the route.

- **MOVE UP** is used to move the selected point upwards within the route.
- **MOVE DN** is used to move the selected point downwards within route.

### 5.7.2.1 View options

There are three different views of creating route: **list** view, **detailed** list view and **map** view. Press the **VIEW** button and scroll to desired mode to change the method (don't click ok). List is the default mode that displays route distance, start, turn and finish points, together with bearing and time (for AAT tasks). Detailed list view is same in all aspects except it also enables you to see coordinates of each point. Map view allows you to view the task on the map and edit zones by scrolling over them (use upper and lower rotatory knobs to do so). If option FAI area is enabled under **MAP** options (see Section 6.2.1.1), you will also see this area here. When using this view, it is usually faster and easier to first create a route in one of the previously described views and then only edit it in map view.



### 5.7.2.2 Starts (Multiple Start Points)

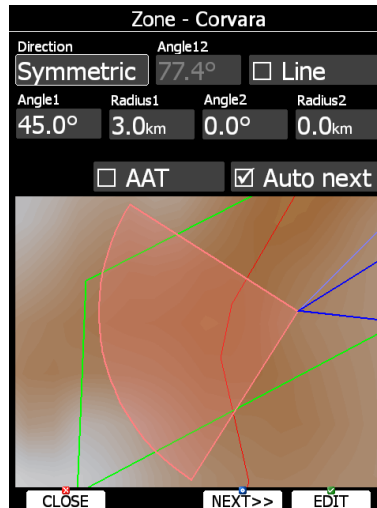
In some competitions multiple start points are used for the start. Press the **STARTS** button to open the multiple starts dialogue.



The first start point will be greyed out. This is point which is defined in route. Add as many start points as required. Subsequently it is possible to cycle through the start points via the CYCLE button.

### 5.7.2.3 Zone (Modifying Zones)

Select a point and press the **ZONE** button. A new dialogue with the observation zone for the selected point will open.



Using parameters in the zone dialogue it is possible to describe all types of observation zones. **Angle12** defines the orientation of the observation zone. Available parameters for **Direction** are:

- **Symmetric:** the most common selection for a turn point.
- **Fixed:** mostly used for assigned areas.
- **Next:** orients the observation zone in direction of the outgoing leg. This is usually used for the start.
- **Prev:** orients the zone in direction of the incoming leg and is usually used for the finish.
- **Start:** orients the sector always towards the start.

If the **Line** box is checked the sector will become a line type of observation zone. The **Radius1** parameter defines half the width of the line length. Use the PAGE selector knob to increase the radius by 0.1 of the selected distance units and the ZOOM selector knob to increase the radius by 5 units.

If **Line** is not checked the **Angle1** parameter will define the basic shape of the observation zone. A value of 180° means that the zone is a cylinder and 45° is the classic FAI sector. Rotate the PAGE selector knob to increase the angle by 0.5° or use the ZOOM selector knob to choose values 22.5°, 45°, 90° or 180°.

**Angle2** and **Radius2** are used for more complex observation zone setups.

When changing observation zone parameters, the screen is automatically updated to display the new zone.

By default, navigation to task points will be automatically advanced; uncheck **Auto next** if you do not want to change over to next point when reaching selected point. This option will be automatically unchecked when **Radius1** is greater than 10 km.

Press the **NEXT>>** button when you are happy with the changes and to continue with the next observation zone setup.



### 5.7.2.4 Route Options

Press the **OPTIONS** button. The options dialogue will be opened.

**Task Options**

Description

☒ Navigate to nearest point  
☐ Use start arm mode

Before start

Gate opens	Below time	Below alt.
--:--	---	---m

Start procedure

☐ Start out of the top

Gate int.	Start alt.	Start gsp.
0min	---m	---km/h

Event procedure

Wait before	Start period	Wait after
5min	10min	5min

Finish

☐ Finish is below start for 1000m

Finish elev.  
244m

CANCEL OK

Enter the route description. This is very useful during competitions where you are given more than one task per day. Some hints for names are **DAY1-B, Triangle1000km** etc.

Check **Navigate to nearest point** and the system will navigate you to the nearest point on the start zone or start line and finish zone.



The **Navigate to nearest point** option is very useful and actually a must if a finish cylinder is used with a significantly large radius. Enabling this option will calculate the final glide to the edge of the cylinder rather than to the centre of the cylinder.

#### 5.7.2.4.1 Saving a Route

Once a route is completed it could be saved to the active waypoint file. Press **SAVE** and the message "Route saved" will appear on the screen.

**Task Edit**

492km Polygon Time: 05:00

S. Sv. Peter

1. Corvara	276°	178km
2. #5000bet	59°	131km
3. Cr		14km
F. Sv.		3.8km

Message

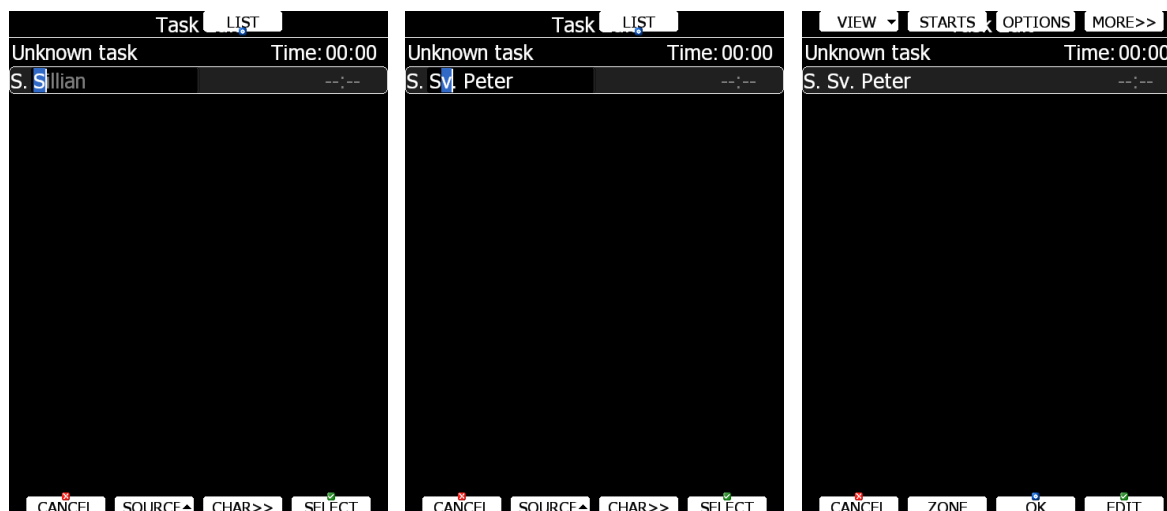
**Task saved.**

If the route already exists in the active waypoint file, the message "Route is already saved!" is shown.

### 5.7.3 NEW route (Route Creation)

Make sure that at least one waypoint file is loaded into the main display unit and that it is checked and marked as an active waypoint file. Refer to Section 5.1.4.1 for details on how to upload waypoint files to the system.

Press the **EDIT** button and enter a turn point name. Entering a point name is very straightforward. Enter the first letter of the task point name using the PAGE selector knob. The "Helper" will show the first waypoint that matches this letter.

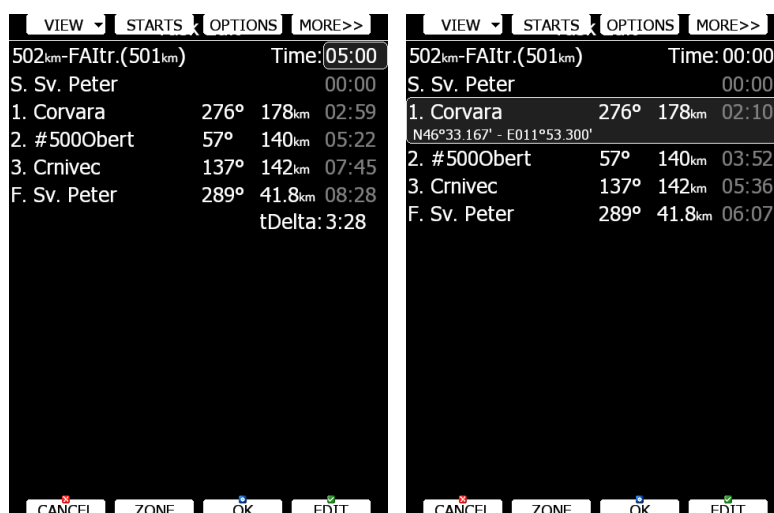


Press the **CHAR>>** button and the cursor will move to the second letter. Use the PAGE selector knob to select the second letter. If you want to return to the first letter turn the ZOOM selector knob anticlockwise.

Repeat this procedure until your desired point is selected. Press the **SELECT** button to complete this selection. If you do not know exact name of a point just select the first letter and press the **SELECT** button. Now scroll to the desired point using the PAGE selector knob. Press the **SELECT** button once more to complete this selection.

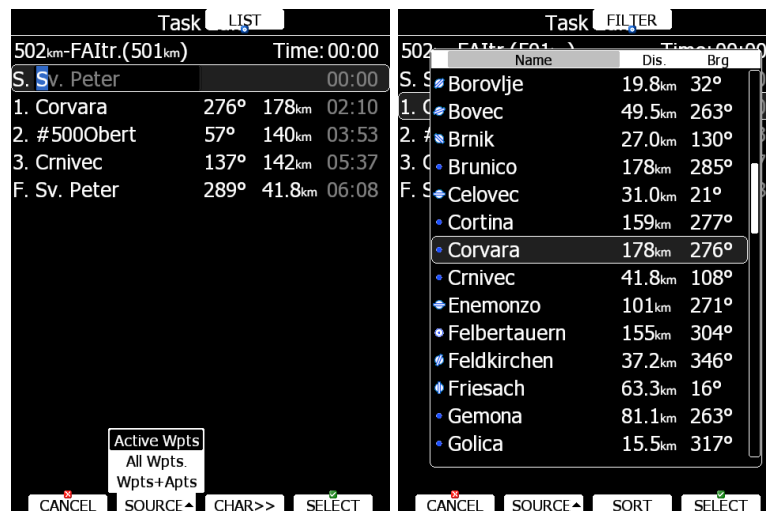
The task edit dialogue should now look like the screen below. The letter "S" indicates you entered the start point and a letter "F" indicates you entered the finish point.

Move the cursor down to the next empty point and repeat the above procedure until the entire task is entered. Next to the task name bearing to point and distance from previous point are shown. When on the ground the time needed from start is shown in last column. On ground calculation for time needed is based on MacCready theory only and it does not take into account wind. If task time is entered, delta time (tDelta) is displayed in last row. Once a task is started, needed time will change to estimated time of arrival to a point.

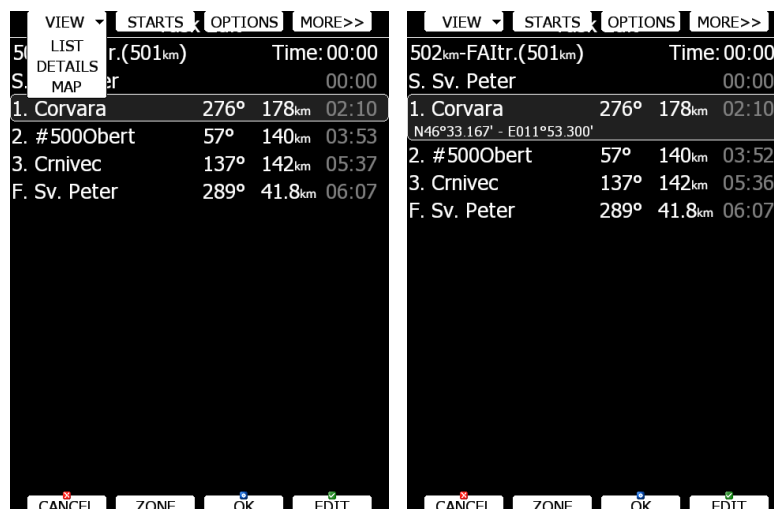




If you would like to change source for selection of waypoints which are used to create task, press the **SOURCE** button and select the appropriate source. There are three options available: **active waypoint file**, **all selected waypoint files** or **waypoint files and airports**.



Sometimes it is easier to see a list of all waypoints. Press the **LIST** button to change the selection method to list mode. Press the **FILTER** button to go back to this mode. In list selection mode it is possible to **SORT** waypoints on name, distance or bearing. Distance and bearing are calculated to the previous point in task. This is very useful when you do not know exactly the waypoint name, but just direction and distance and where to go.



Press the **VIEW** button to change view from list to detailed list view. In detailed list view also, latitude and longitude for selected task point are given. Press the VIEW button once more to enter map edit mode.

#### 5.7.4 Creating a Route in SEEYOU

Routes can be also created in SeeYou software and loaded into LX systems.

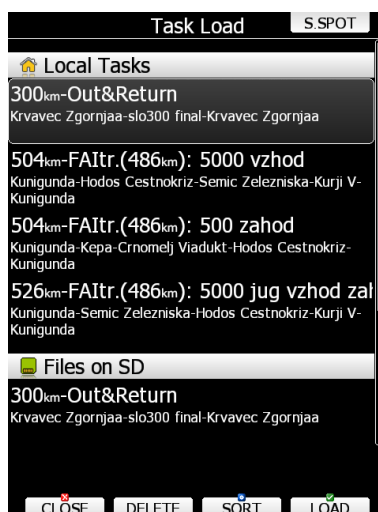


For more information about creating a task in SeeYou, please read the manual which can be found here: [www.naviter.com](http://www.naviter.com)

For loading a route into LX system please refer to Section: 5.7.5.

## 5.7.5 Loading a Route

It is possible to load a route from the stored routes within the active waypoint file. Select the **LOAD** action within route mode. A dialogue with a list of all stored routes will appear.



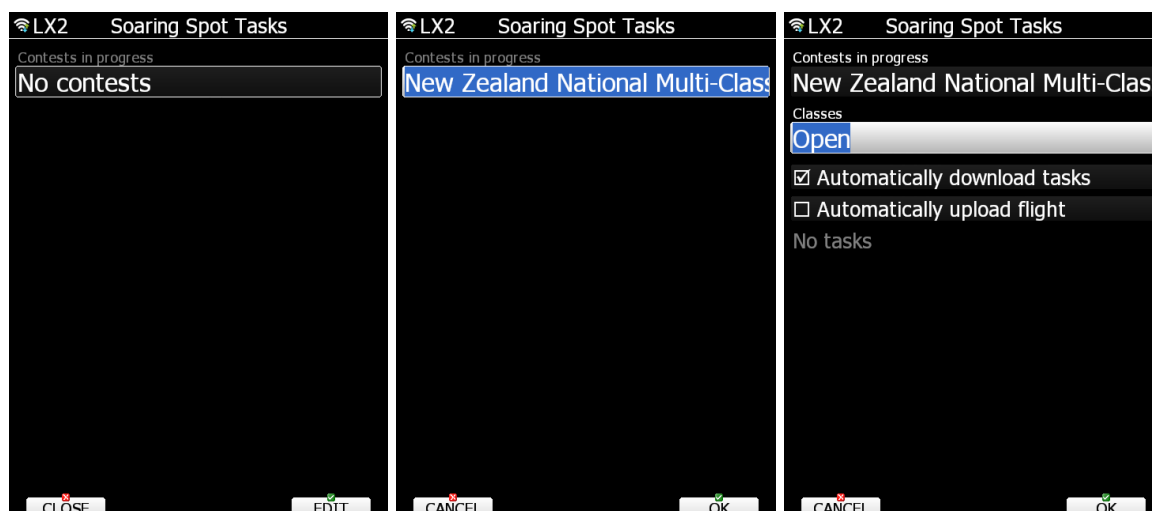
Total route distance, route description and route points are shown for each route stored. Select the desired route by rotating the PAGE selector knob and press **LOAD**. The route will be loaded into the active task and the route edit dialogue will be opened.

It is also possible to delete routes from the active waypoint file. Press the **DELETE** button to delete the selected route.

Routes can be sorted by start point, route distance and route description. Press the **SORT** button to toggle the sort method.

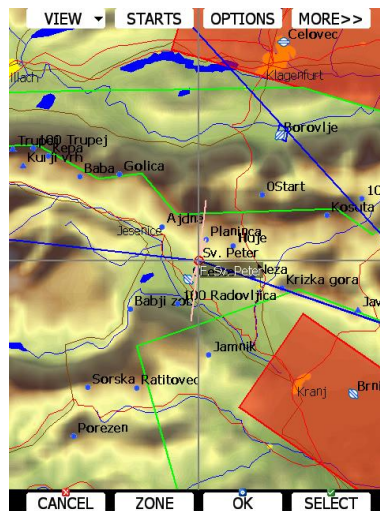
### 5.7.5.1.1 Loading a Route From Soaring Spot (S.SPOT)

If an LX has the Wi-Fi option enabled and has an established internet connection then the S.SPOT button will be available. The user should select the contest and racing classes. By enabling options "automatically download routes and upload flight" everything will be done without any operation needed on the instrument (if routes are available and if an Internet connection is established).



### 5.7.5.2 Map Edit Mode

In map mode it is possible to create a route on a map. Use the MODE selector knob to move the grey cross left or right and the PAGE selector knob to move up and down. Turn the ZOOM selector knob to zoom.



Move the cross to a route point to select it and move it around. Move the cross to a route leg to insert a point.

## 6 Navigational Page Layout

On the main display unit navigational page layout can be completely modified and customized to match user preferences. You can do this with **LX Styler program**, a free program for the Windows operating system, which can be downloaded from our webpage [www.lxnav.com](http://www.lxnav.com) (see the LX Styler manual for more details).

In this section only customization on the device will be explained.

### 6.1 Navigation Page Options

If you press any of the buttons on any of the navigational pages multiple options will display under/above the buttons. Press the corresponding button to access the desired menu or perform desired action.

#### 6.1.1.1 Map Settings

Map can be quickly configured using this dialogue. Select map orientation in the orientation setup.

A map can have **north**, **east**, **west** or **south** orientation. These orientations are fixed and are not changed with glider position. Additionally, to this orientation there are several more which will rotate the map as the glider position changes:

- **Track up** will always have the glider ground track in the up direction.
- **Heading up** will always have glider heading in the up direction. If the compass module is available, the heading will be taken from the compass otherwise the heading is calculated from the wind and the ground speed vectors.
- **Goal up** will have target point in upper part of screen.



Map orientation is setup separately for straight flying or circling. If **Zoom to target** is checked the zoom will be automatically adjusted so that the target point is always visible. Maximum zoom is 200 km and minimum zoom is 1 km. The check boxes will turn on or off the following items:

- **Map** – complete map is turned on/off.
- **Terrain** – only terrain is turned on/off.
- **Raster** – scanned maps is turned on/off
- **Airspace** – toggle airspace display on/off.
- **Wpts** – waypoints drawing is turned on/off.
- **Flarm** – FLARM radar display is turned on/off.
- **Path** – flown path is switched on/off.

- **Cur.trk** – current track vector.
- **Rng.cir.** – range circles
- **Opt.dis.** – optimised distance.
- **Opt.tri.** – optimised triangle.
- **FAI area** – FAI triangle assistant is turned on/off.
- **Gld.rng.** – is gliding range and shows which area is still reachable with current altitude, wind and MacCready setting.
- **Satellite** – will show a satellite picture layer over the map
- **Forecast** – will show a weather forecast layer over the map
- **Rain** – will show a rain radar layer over the map



Satellite, Forecast and Rain layers are seen if LXNAV Connect is activated on the device.



A FLARM object may also be hidden because competition mode is on or privacy mode is on. Please check these settings if FLARM objects are not visible, even if the item is checked.

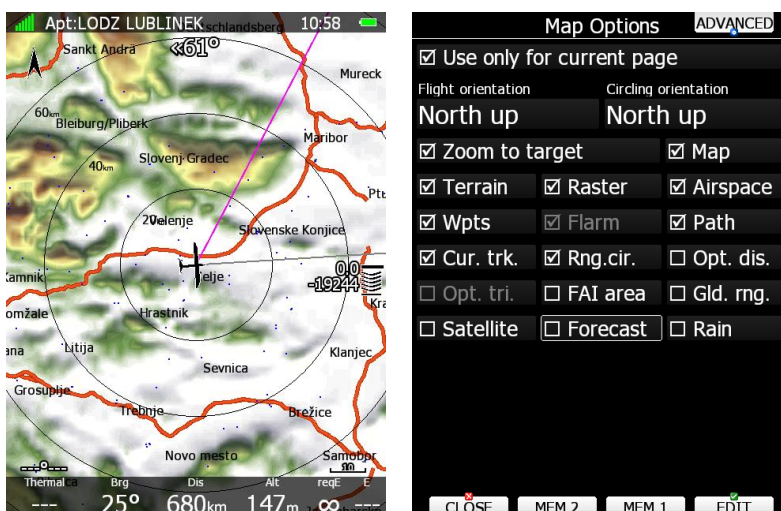
You can adjust these parameters separately for APT, WPT and TSK pages.

With Software version 7, the user can configure all custom map and graphics settings for every page in every mode. **Use only for current page** will affect settings for the currently active page, otherwise you will be changing the global style and changes will take effect on all the pages in every mode. The **Advance** button allows you to change graphics settings for the current page (if **Use only for current page**) or global settings.

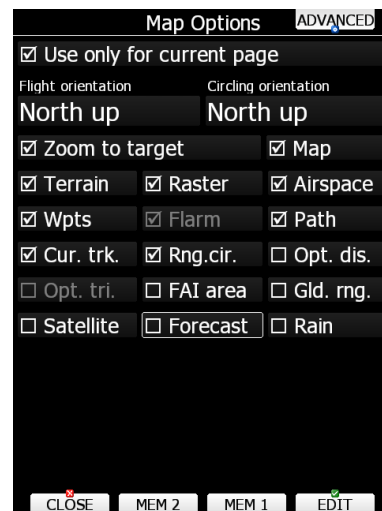
From better understanding, we show an example below of different map and graphics settings for APT mode.

Example:

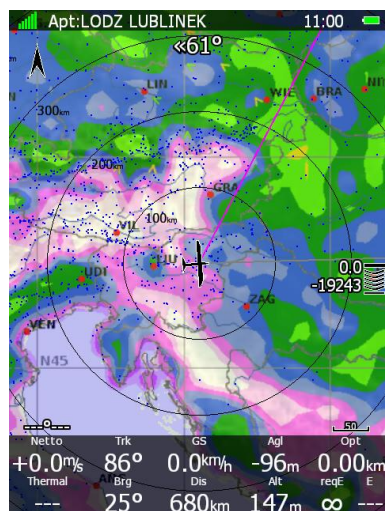
- APT mode, page 1 (low contrast graphics)



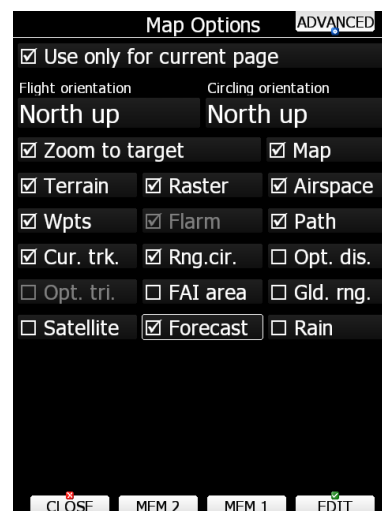
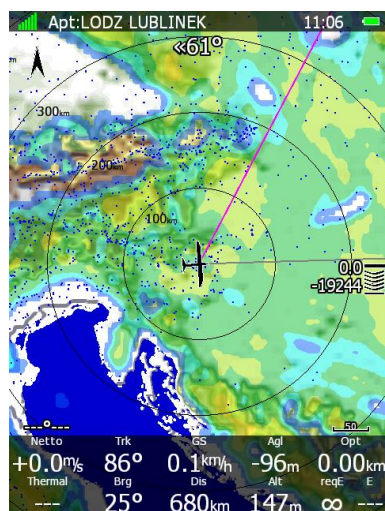
- APT mode, page 2 (ICAO graphics, larger fonts)



- APT mode, page 3; forecast TopMeteo

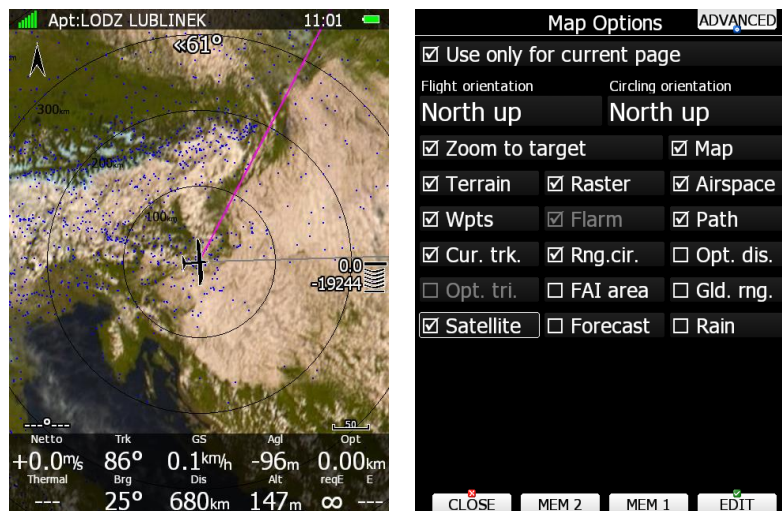


- APT mode, page 4; forecast SkySight

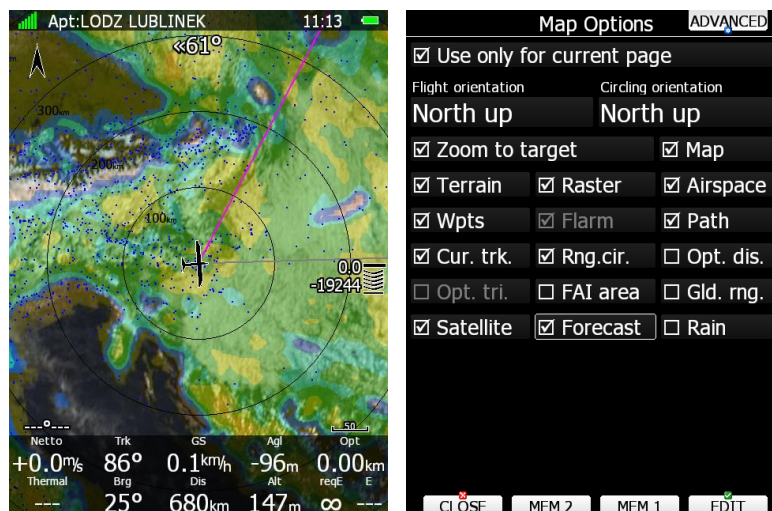


- APT mode, page 5; Satellite picture

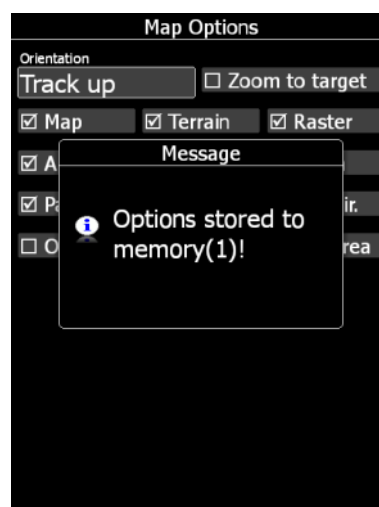




- APT mode, page 6; Satellite picture with SkySight forecast



It is possible to store map settings for future use. There are two memory locations MEM 1 and MEM 2 for two different memory settings.



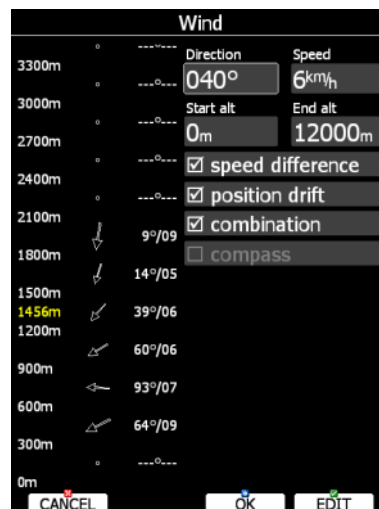
Press button **MEM 1** for a long time. A message "Options stored to memory (1)" will be displayed and the settings are stored. Change the settings a little bit. Press button **MEM 2** for long time. A message "Options stored to memory (2)" will be displayed and the settings

are stored to memory location 2. Now a short pressing of **MEM 1** will invoke the saved settings from memory 1.

### 6.1.1.2 Wind

The main display unit constantly calculates the wind using four different methods. The **Speed difference** method is used during circling and is taking into account ground speed difference in a single circle. **Position drift** is calculating wind based on position drift during circling. A minimum of three circles must be completed to obtain the first wind measurements. The third method is **combination**, which takes into account also airspeed received from the vario unit.

If the **compass** module is available the wind is also estimated using the wind triangle. Calculated wind is stored in layers. Layer height is 300 m or 1000 ft and cannot be modified by the user.



On the rear seat device there is additional method called **front seat**. When the **front seat** method is selected the device will use the wind calculated by the front seat only and all other methods will be disabled. This will ensure that both devices are using same wind information for final glide calculations.

The wind profile is shown on the left side of the dialogue. Yellow coloured altitude indicates our current MSL altitude. Using the ZOOM selector knob you can scroll up and down through the wind layers.

Use the **EDIT** button to manually enter wind data. If a new wind direction is entered all wind directions in range from start altitude to end altitude will be modified. The same procedure is used for wind speed.

The user can also disable or enable a particular wind method. It is recommended to have all methods enabled.

Once the wind is modified to suit your needs press the **OK** button to accept the wind values. The dialogue will exit automatically.

If the **CANCEL** button is pressed the wind dialogue will be closed without applying the changed values.

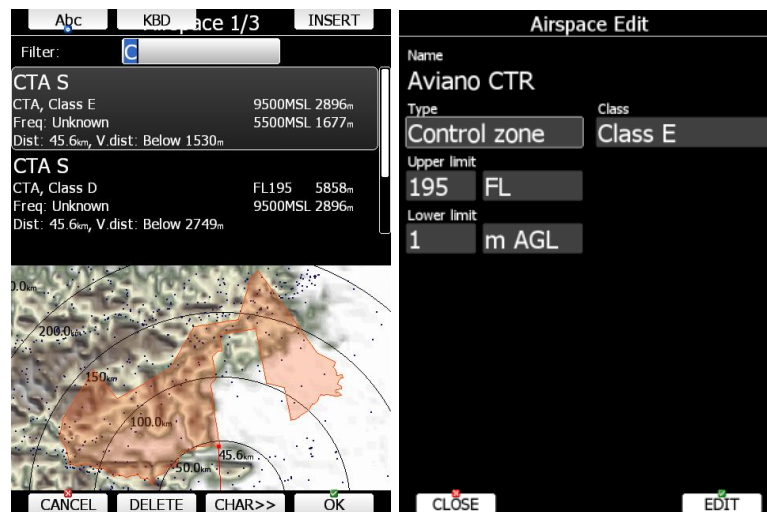


In double seater configuration, the second seat device can be set to receive wind information from the first seat by ticking the **FRONT SEAT** option.



### 6.1.1.3 Airspace

The Airspace dialogue shows a list of airspace zones in the vicinity of your position. Vertical and horizontal distances are calculated to all airspace zones in the list.



The **VIEW** button toggles the list views. When the **STATUS** button is pressed the status of the selected airspace zone will toggle between **OFF always**, **OFF today**, **OFF hh:mm** and enabled.

If the **EDIT** button is pressed a new dialogue will open where you can modify properties for the selected zone. Refer to Section 5.1.4.4 for more details.

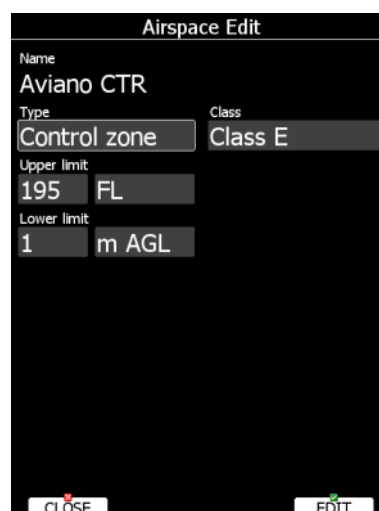
When a zone is alarmed the distance will be coloured orange.



Map display of airspace is available only on LX90x series. The LX80x series cannot show it due to display size limitations.

Pressing **ALL** will disable all airspaces for TODAY or ALWAYS. To enable them again press ALL and select ENABLE.

Button **FILTER** will show airspaces by inserted name/character.



Press EDIT to edit data for the selected zone. Airspace type, class and altitude borders can be modified in this dialogue.

#### 6.1.1.4 Mark

If you press the **MARK** button a new waypoint will be created with the current latitude and longitude and elevation based on the terrain database. The waypoint name is generated from the current date and time separated by the minus character and preceded by an underscore.

Waypoint data can be modified. Refer to Section 5.6.1 for more details. Press the **OK** button to save a marked waypoint or press **CANCEL** to exit without saving. Press the **GOTO** button to navigate immediately to the selected point.

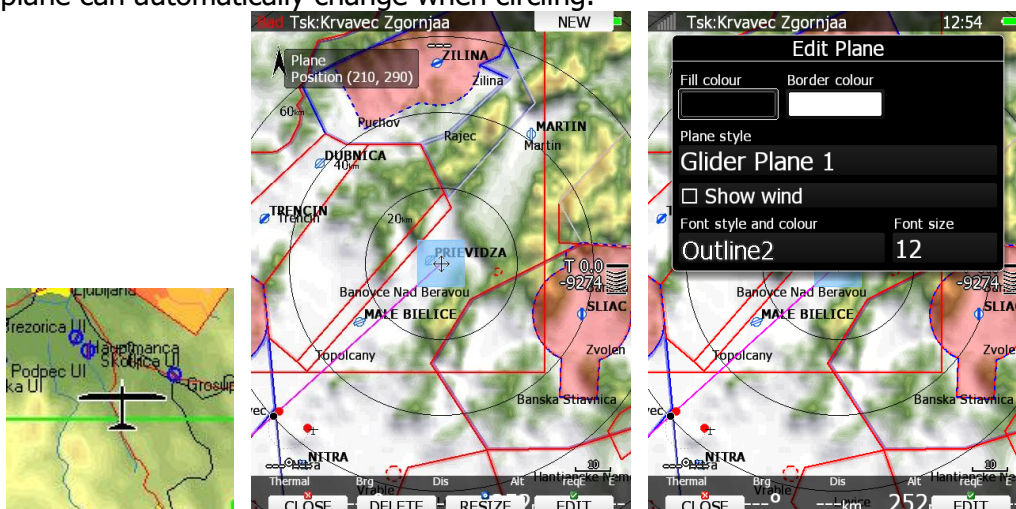
#### 6.1.1.5 Night

Use this option to switch the display brightness to minimum visibility which is suitable for night flying.

### 6.1.2 Map and Plane (Plane Symbol)

The plane symbol shows the current position and direction on the map. It will always be automatically added and deleted together with the map.

Plane has two different position settings. The symbol is placed in one position when the map orientation is North up, East up, South up or West up and in the other position when current orientation is Track up, Goal up or Heading up. Depending on settings, the position of the plane can automatically change when circling.



### 6.1.3 Orientation Symbol

The orientation symbol shows North direction.



### 6.1.4 Final Glide Symbol



The final glide symbol shows your predicted arrival altitude. Negative numbers indicate that you are below the glide path and positive numbers indicates you are above the glide path. In the above example the glider is 226 m above the glide path. Chevrons show the position relative to the required glide path in percent. One arrow means 5% above or below final glide. In route mode it is prefixed with the letter **T**, **S**, or **U**. Sometimes there will be another number above in yellow colour, which is used for arrival over terrain. If we are on final glide to a selected target but between it and the current position there is terrain which cannot be crossed without more height, then this number will give you an estimate how much you must climb to pass over the terrain. A **red** rectangle will also be shown on the magenta line indicating the point of potential collision. In above example we have to climb 544m in order to cross terrain.

#### 6.1.4.1 Final Glide Character Explanation

The Character **"T"** means ROUTE, which means final glide to finish on route. The picture below shows we are almost on final glide for route over all remaining points.



The Character **"S"** means START, which means final glide to the start line.

The Character **"U"** means UNCOMPENSATED, which means the extra energy which you have with the speed above best glide speed is not taken into account when calculating final glide. It appears when you are close to the finish line. In the picture below, you would be 245 m above final glide to route finish taking into account extra kinetic energy. If finish is at 200 m, your current altitude is 436 m.



### 6.1.5 Battery Indicator

Battery will visually display the current level of the battery. Green indicates that battery is ok. It will turn yellow and later red when the battery is empty. The battery symbol colours are related to the battery voltage which can be set in Section: 5.1.8.3.



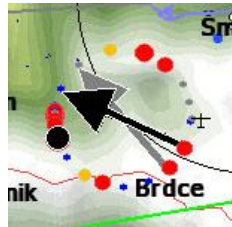
### 6.1.6 GPS Indicator

GPS shows the status of the GPS signal. Green colour indicates that GPS has acquired a 3D position and yellow colour stands for a 2D position fix. When red, no position is calculated by GPS. Each bar represents two visible satellites. If the symbol N.C. is present, there is no GPS connection/detected.



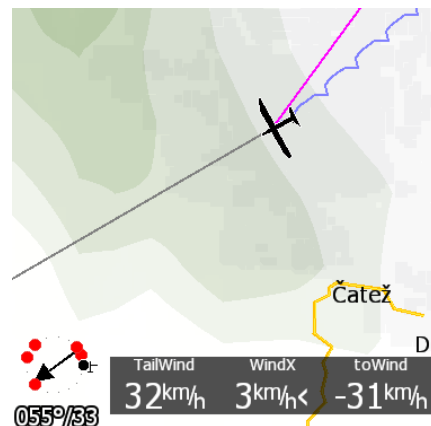
### 6.1.7 Wind Arrow and Thermal Assistant

The wind symbol shows the wind direction. A black arrow shows combined wind information (position drift, speed difference and combination method). A grey arrow is a real-time wind. The number represents the average wind measurement. Around the wind symbol a thermal assistant can be shown during circling. Enable or disable this feature via the "Has Thermal" property.



The wind arrow can be configured in LX Styler or on the instrument. On the instrument, you need to go to LAYOUT and select the Wind symbol. After pressing EDIT it is possible to change the colour for the current/average or both Wind arrows.

There are a few Wind navboxes which can be very useful.



**cWind:** Head/Tail wind component

**WindX:** Side wind component

**ToWind:** Head/Tail wind to target

The thermal assistant continuously analyses the thermal whilst circling. The sizes of the dots indicate the strength of the thermal. Big dots mean stronger lift at that point. On the left or right side of the circle a small airplane symbol is shown. This airplane indicates your position. A black dot indicates the thermal maximum. The pilot should extend the circle when the black dot is about 60° away from glider. This value varies and depends on the turn rate of the glider and type of thermal. All other dots are coloured based on the MacCready setting. Red colour means values above MacCready, blue values below MacCready and yellow dots represents lift about the same strength as the MacCready setting.

This colour scheme gives us hints about a thermal at glance. If most of dots are red we should consider increasing the MacCready value; if most of dots are blue we should consider decreasing the MacCready setting.

### 6.1.8 Zoom

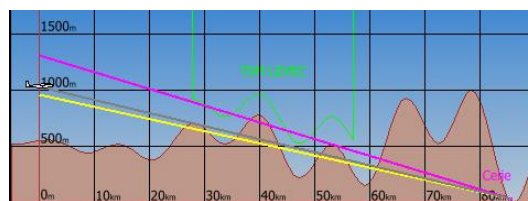
The zoom symbol shows the current map zoom. It can be used only when the map symbol is already on the page. Zoom can be presented in two ways: a number on the symbol indicates the length of the zoom symbol or the number indicates length of the whole screen. You can toggle the "Show full screen distance" property to change this setting. The displayed value is given in distance units (km, nm or mi).



### 6.1.9 Side View

This symbol shows the lateral view of our position towards the selected target or bearing of the plane. It shows terrain and airspace in that direction.

A grey line represents the projected track based on the glide ratio. A yellow line is showing the requested glide ratio to goal. You can change the appearance of airspaces in the Setup > Graphics > Airspaces settings dialogue.



### 6.1.10 Picture

Waypoint files with extension .cupx include also pictures for specific waypoints which can be displayed if this option is enabled.

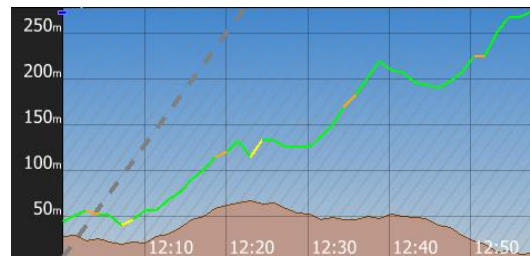


### 6.1.11 History

With the History symbol you can see the flown path of the whole flight or just some last minutes of it. By default, it shows the complete flight. The symbol displays the altitude of aircraft and terrain.

By default, circling to the left is coloured in orange and circling to the right is displayed in yellow colour.

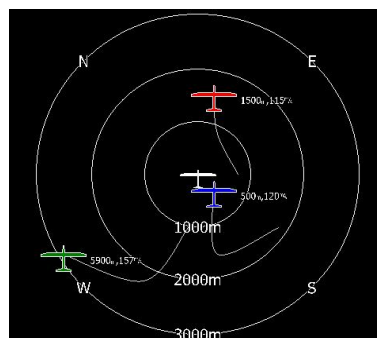
On the left side there is a blue marker that indicates the current position and change in position in last 20 seconds.



### 6.1.12 FLARM Radar

The radar screen will show FLARM (and ADSB) targets at a predefined zoom. You can change the zoom in the edit layout dialogue, or you can rotate the ZOOM knob to change it. This will work only if the map symbol is not on the current page.

There are also ascending slopes drawn with grey colour. This indicates the MacCready values.



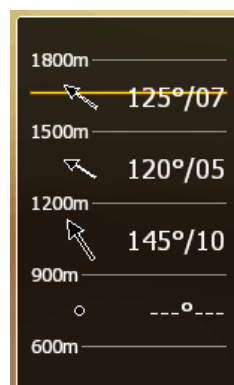
### 6.1.13 Wi-Fi Indicator

Show status of the wireless network connection. If a red cross is drawn over the symbol that means that the Wi-Fi adapter is not connected. A light blue circle means that wireless networks are available. If connected to network the indicator will display the signal strength.



### 6.1.14 Wind Profile

The wind tape symbol shows the wind. You can see the wind direction and speed at different altitude bands. This information is depicted graphically with an arrow on the left side and with values on right side. The current aircraft altitude is indicated by a yellow horizontal line. You can also see the wind profile in Wind dialogue. Here you can also manually change values.





## Flying with the System

To get the best out of the system it is important that some preparation is done prior to take-off. Trying to configure the instrument or set a task while flying is very hazardous especially in a competition. At least, it could spoil your whole day! Pre-flight preparation will ensure that the flight will be both safe and enjoyable.

### 6.2 On the Ground

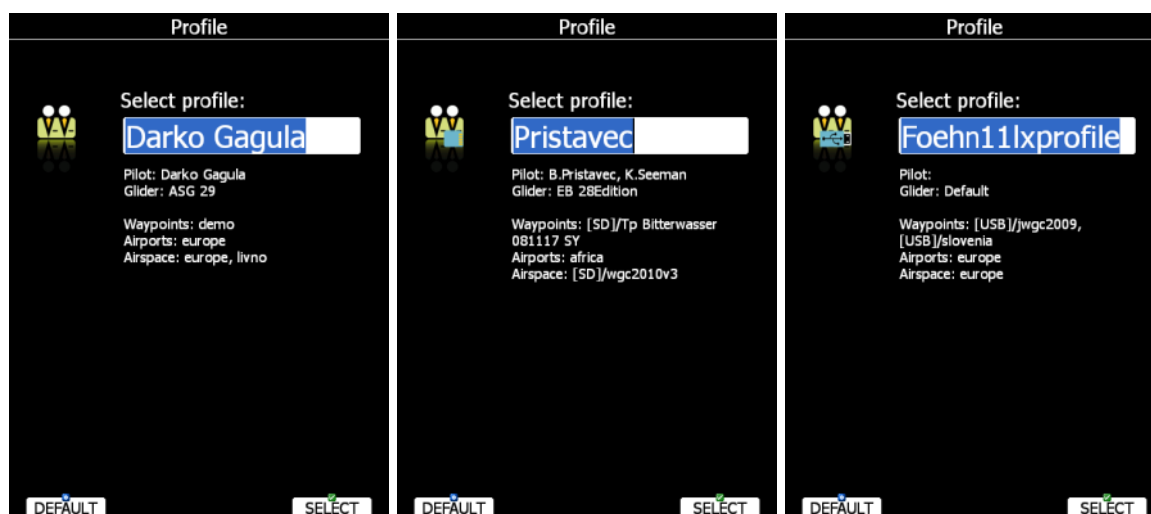
#### 6.2.1 Power-On Procedure

Press the power-on button. The main display unit and the vario unit will turn on and a few moments later welcome screen will appear. The first screen shows the version of the boot loader followed by the version of the Linux kernel operating system, then the version of the file system. The boot procedure normally takes 10 seconds. When completed the profile selection dialogue is shown.



It is recommended to switch the unit ON some minutes prior to take-off to give the GPS receiver time enough to acquire satellites. The flight recorder will also make a take-off baseline. Longer running on the ground will not reduce flight recorder capacity.

#### 6.2.2 Profile Selection



Turn the PAGE selector knob to select the desired profile if more than one profile is available. First profiles stored in internal storage are displayed, then profiles on SD card are shown and finally profiles on a USB stick are shown. You will note that a profile resides on the SD card/USB stick by a small SD card/USB stick symbol in the lower-right part of the pilot icon.

For the selected profile the pilot name, glider type, loaded waypoint files, loaded airports databases and loaded airspace databases are shown.

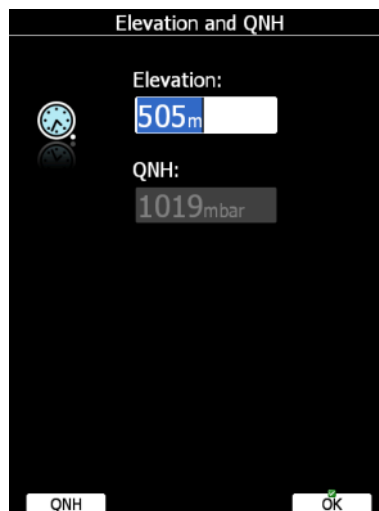
If a file is stored on a SD card or USB stick, a label [SD] or [USB] will appear in front of file name.

To learn more about profiles refer to Section 5.1.9. Press the **SELECT** button to confirm selection of the profile. Press the **DEFAULT** button to start the system with default settings. The set elevation dialogue will follow.



### 6.2.3 Set Elevation and QNH

This setting is crucial for final glide calculation: therefore pay careful attention to it.



The instrument will offer a value for elevation from the terrain database based on the current latitude and longitude. Elevation will mostly be within few meters from the current elevation. Use the PAGE selector knob to fine-tune the elevation. If the elevation is unknown and the QNH pressure is known you should NOT press button **QNH**. Just keep turning the PAGE selector knob and observe the QNH value to adjust it to the proper value. The **QNH** button should be pressed only when airfield elevation and QNH pressure are given. This might happen on some competitions. In all other cases elevation should always match QNH pressure.



The Profile selection and Elevation dialogues are not shown if the system is switched off and on during flying.

### 6.2.4 Pre-Flight Check

After elevation setup the system will switch to airport mode. It will take a few moments to draw the map screen for the first time. All waypoint files and databases are loaded at that time and therefore instrument might react somewhat slowly.

### 6.2.5 Preparing a Route

While it is advisable to prepare the route properly before taking off and thus avoid mistakes made in a haste, actions such as preparing, editing, loading and saving can be done while in the air. However, the route cannot be declared in the air.



There is only one route which can be declared. This route will be automatically declared in the IGC file on take-off. The route can also be modified during flight but any changes will not be written to the IGC file.

There are currently three methods to create a route.

- Read a waypoint and route file from SD card and load a saved route.
- Load a similar route and modify it.
- Enter a route manually.



It is very important to check the route prior to take-off. Check the turning points sequence, distance between points, bearings and total route distance. Visually check the routes and observation zone geometry in the map view.

## 6.3 Flying a Route

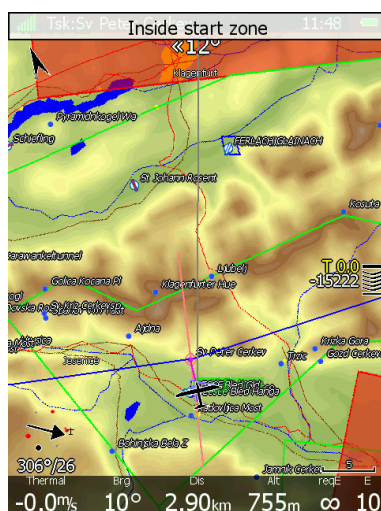
After take-off the unit will switch to flying mode. The pilot will notice this because the statistics page will change from logbook view to flight statistics.

### 6.3.1 Starting a Route

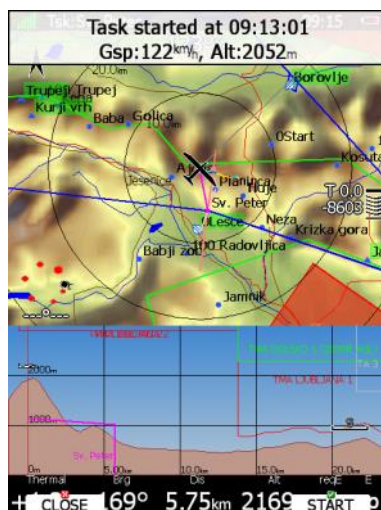
Before starting a route (in route mode) a character "**S**" will be displayed on the final glide symbol. This indicates that the route has not yet been started. The lower number tells you at what altitude you will start. There are two options to start a route.

#### Via the **START** Button

Once you decide to start the route and airplane enters start observation zone, the message "*Inside start zone*" will be displayed.



You may now leave the start observation zone and fly towards the first turn point. When leaving the start observation zone, the message "*Route started*" will be shown.

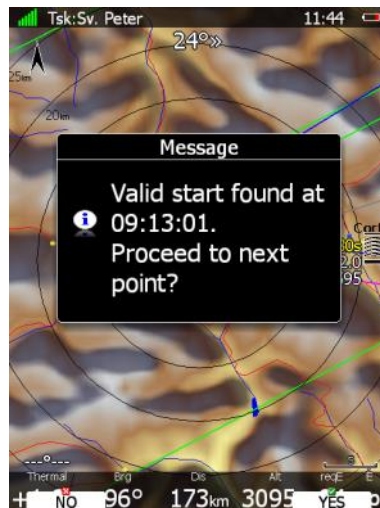


Ground speed and pressure altitude are also shown in the message. At the bottom two buttons are displayed. Use the **CLOSE** button if this was not a valid start and you want to remove the message from screen. If the message is removed it will appear again next time you leave the start zone. If you press the **START** button navigation will be advanced to the first turning point.



There is no need to press **START** inside the start observation zone. You may press it any time after leaving the start observation zone or crossing the start line. The system will always take the correct time as start time.

If for some reason you miss the start message you may always start the route by pressing the **START** button. Enter route mode and press any button. In the top row the **START** button is shown. Press this button and navigation will be advanced to the next turn point. In case you change the route in the air, and you are already flying towards first turn point you will still be able to start a route. Press the **START** button and a message dialogue to confirm route start will be opened.



### 6.3.2 Restarting a Route

If for some reason you decide to abandon the route and you wish to restart the route go to route mode and press any button. In the top row the **RESTART** button is shown – press it. You have to confirm restarting of the route. Once the route is restarted navigation will be changed back to the start point.

### 6.3.3 Over Turn Point

When a turn point observation zone is reached the message "*Inside zone*" will be displayed and the route will auto advance to the next turn point if the **Auto next** option was selected.



If the **Auto next** option has not been selected the message **NEXT** will be displayed. Press the associated button to advance to the next turn point. If for some reason you missed this

message you can always advance the route to the next turn point by pressing the **NEXT** button. Go to route mode. In the upper row the **NEXT** button is shown. Press this button and navigation will be advanced to next turn point.

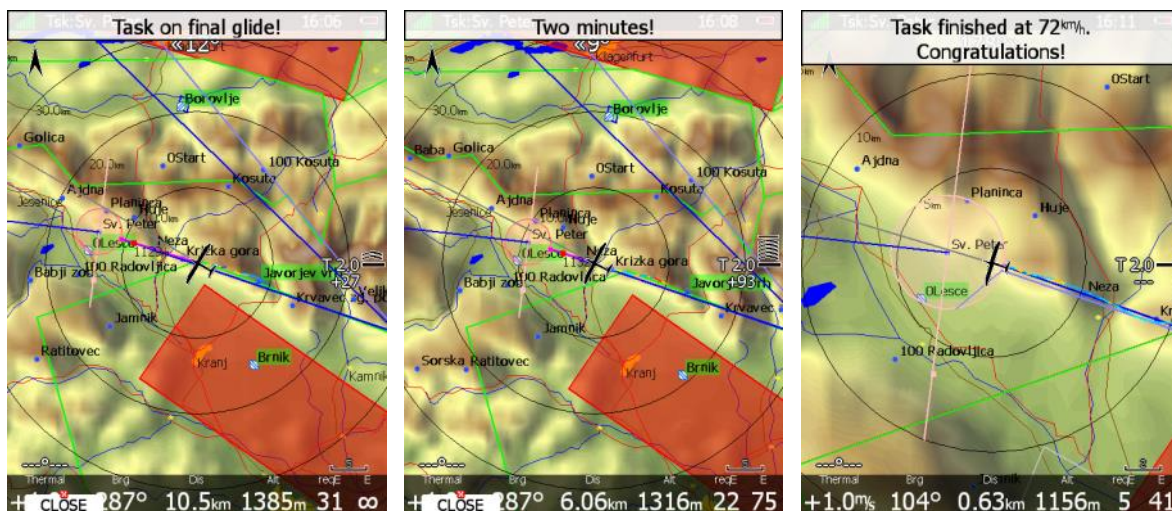
In case you did not reach turn point and you wish to continue navigation towards the following point anyway press the **NEXT** button.



A message will appear. If you confirm this with **YES**, the route will be advanced to the next turn point and it will recalculate the task taking the optimal fix as the task point.

### 6.3.4 Route Finish

The main display unit will warn you when you are two minutes from the finish. On entering the finish zone, the route stops automatically, and a message will be displayed.



If you want to fly a new route without landing, load the new route and press the **RESTART** button.



The **Navigate to nearest point** option is very useful and actually a must if a finish cylinder is used with significantly large radius. Enabling this option will calculate the final glide to the edge of the cylinder rather than to the centre of the cylinder.

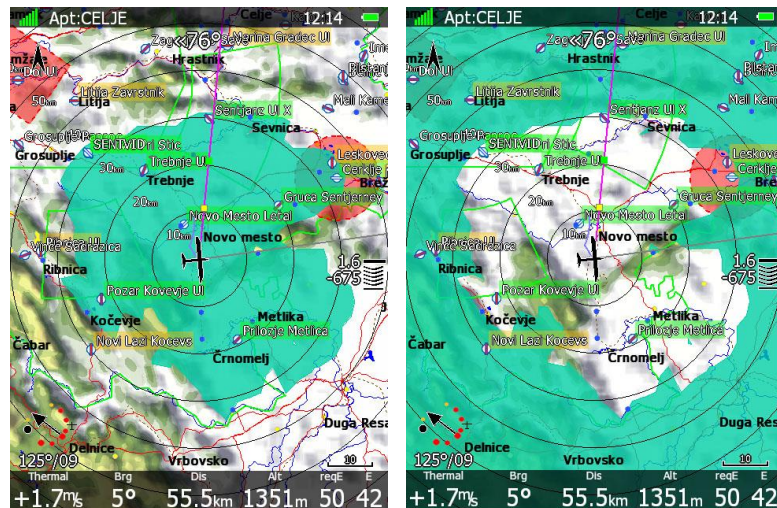
### 6.3.5 Graphical Final Glide Assistants

There are a number of graphical final glide assistants available:



- Glider range (outside/inside fill)
- Different colors of APTs in near mode list
- Different colors of APTs on the map
- Square symbols

**Glider range** can be filled outside or inside. Different fill types, colour and opacity can be set as shown in Section 5.1.5.5.

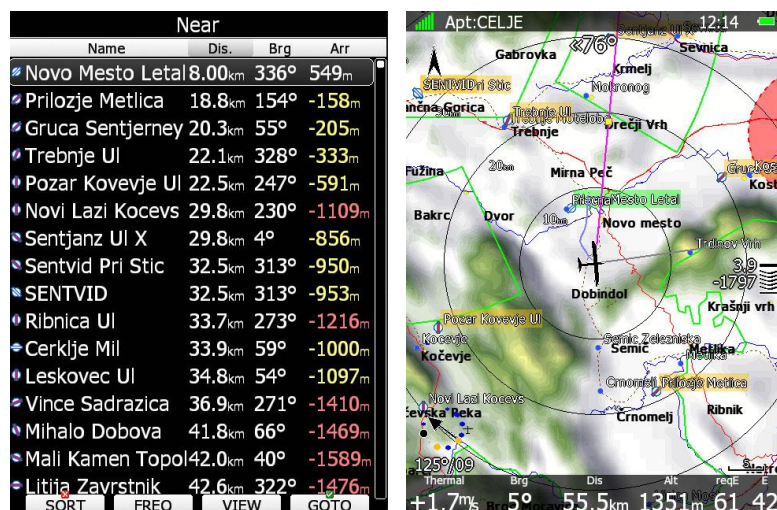


In Near mode arrival altitude is coloured white, yellow and red.

White final glide shows APT in range.

Red colour means these APTs cannot be reached.

The same colour logic is used for the APTs appearance on the map.

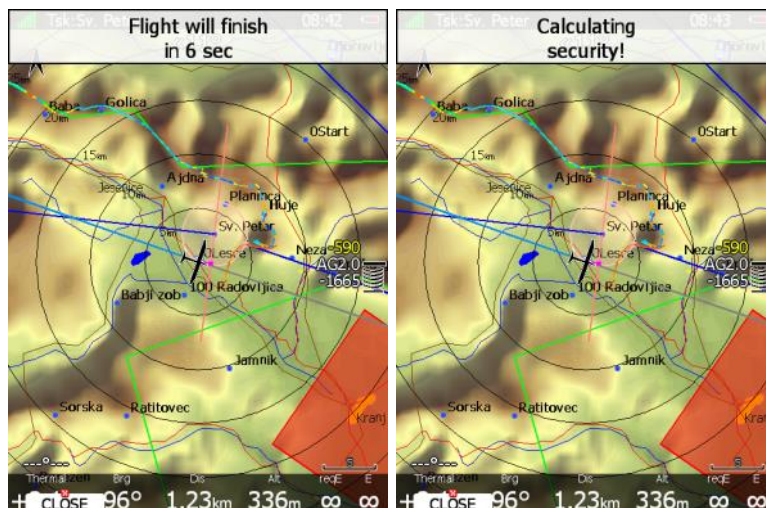


A **square** indicates final glide.



## 6.4 Procedure After Landing

IGC Regulations require a straight line (base line) in the barogram at the beginning and end of the flight. For this reason, that it is essential **not to switch the unit OFF** immediately after landing, but to wait a few minutes. First the message "*Flight will finish in 10 seconds*" will appear and then the message "*Calculating security!*"



The flight is finished when the message *Calculating security* disappears. At that moment the statistics page will be changed back to logbook view. Now it is safe to switch off the instrument.

If a SD card or USB stick is currently inserted into the main display unit the flight will automatically be copied to it.

Please use regular methods to power down the system. See Section 4.4 for details.



It is important that the system is switched off via software. Never power down the system using the main power switch. The main display unit is running the Linux operating system and sudden power loss may corrupt the file system.

## 7 Firmware Update

Firmware updates of the main display unit, vario unit or vario indicator can be easily carried out using a SD Card or USB stick. Please visit our webpage [www.lxnav.com](http://www.lxnav.com) and send us a request for the firmware update.

Update can be also done through Wi-Fi (if an Internet connection is established and the Wi-Fi module is enabled on the LX system).

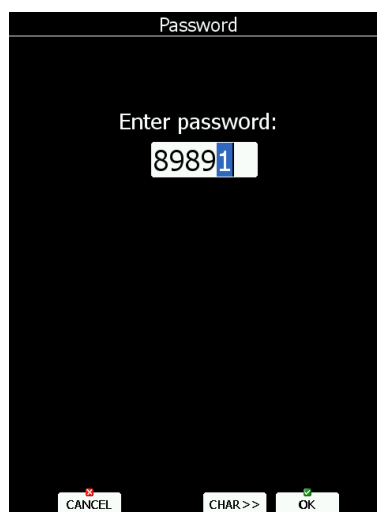
You can also subscribe to a newsletter to receive news about the system automatically.



After firmware or during firmware update, no data or no response from vario are normal messages.

### 7.1 Updating the Main Display Firmware

We will send you an update file and update code. The update code is a string six letters long and the update file has the **.lx800**, **.lx80**, **.lx900**, **.lx905** or **.lx907** extension. To proceed with the firmware update, copy the update file to a SD card or USB stick and insert it into the main display unit.



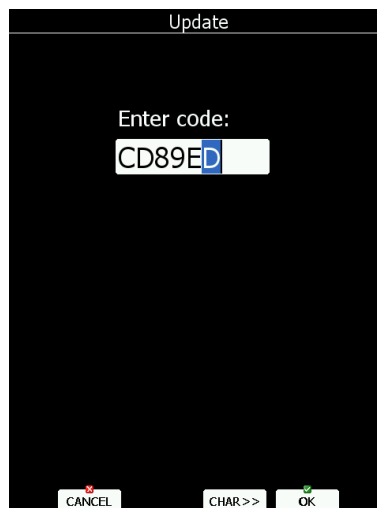
Start the main display unit and go to the Setup->Password menu option.

Enter password **89891** and press **ENTER**.

The system will automatically search for an update file. If more than one update file is found a selection dialogue will appear.

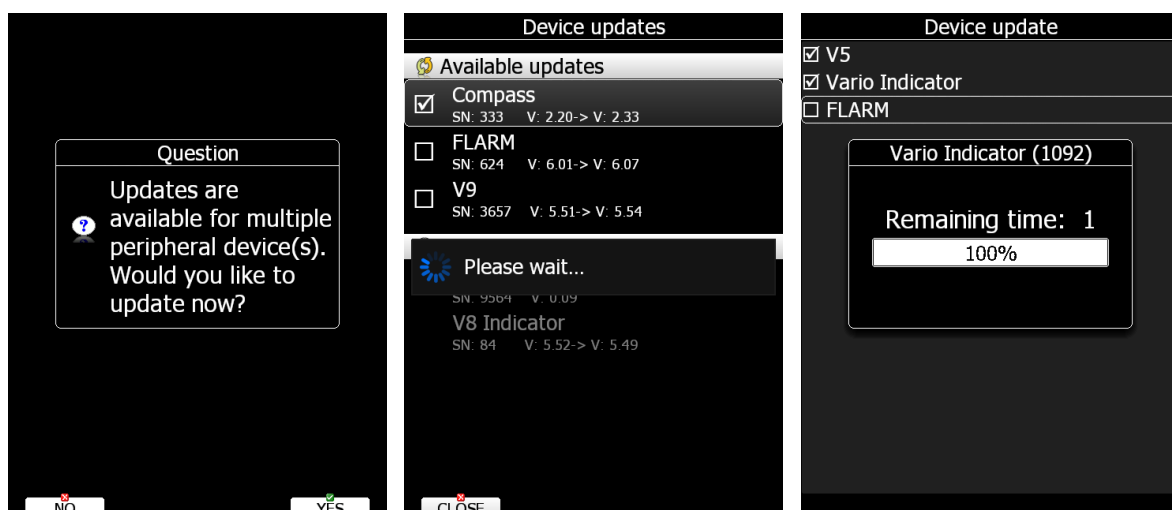
After the update file is selected an update code must be entered.

Enter the update code which was sent to you (example below).



Please note that the update file and update code are a matching pair only applicable to a particular serial number.

Once the update file is verified the main display unit will reboot and the new firmware is ready for use.



After the first reboot the main display unit will also update all devices connected to the 485 bus. On average this update will take approximately five minutes.

### 7.1.1 Updating Via Wi-Fi Module

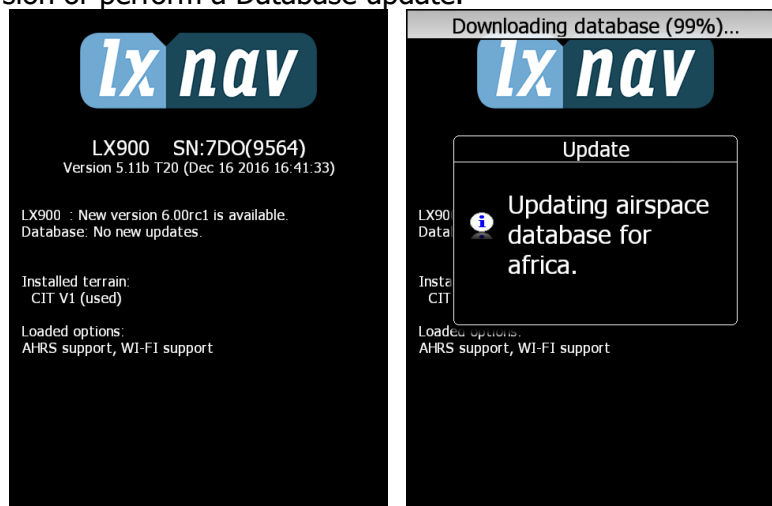
With the SW version 6.0 onwards it is also possible to perform an update without a SD card or USB stick. Once the Internet connection is established, the system will automatically give you a notification that there is a new update available. The user has 3 options available **update** – which will perform the update, **ignore** – this message will be ignored and it won't be shown anymore for this version and **later** option – which will notify you after each restart.

The update button will download the version, make an update and display a message "update successful" After that the system will perform a restart. The user will also be asked to make an update of peripheral devices. We suggest you to confirm it and update all devices.





Updates are also possible via the SETUP->ABOUT page, where there is the button UPDATE (button is grey if there are no new Updates available). The user can update the LX system with the SW version or perform a Database update.



## 7.2 IGC Barograph Recalibration Procedure

The main display unit has an additional pressure sensor for altitude recording. To comply with IGC procedures this sensor has no external pneumatic connection. To carry out the barograph calibration procedure it is necessary to remove the instrument from the glider and place it in a vacuum chamber. The procedure is as follows:

- Switch the instrument ON and wait some minutes (straight line on the barogram beginning).
- Set the recording interval to 1 second (see Section 5.1.2).
- Place it in the chamber and carry out a short climb to about 100 m (to start the flight recorder).
- Bring the chamber pressure to exactly 1013.2 hPa.
- Decrease the pressure by 1000 m and hold for about 30 seconds.
- Continue the procedure to 9000 m.
- Increase the pressure in 1000 m steps back to 1013.2 hPa.
- After reaching ground wait about 3 minutes and then switch the instrument off.
- Leave the instrument off for at least 5 minutes.
- Download the last flight and print the barogram.
- Restore the flight recorder settings.

The barogram will be the last flight in the logbook.

## 8 Options

### 8.1 FLARM



Before using FLARM it is highly recommended to read the FLARM user manual which can be downloaded from [www.flarm.com](http://www.flarm.com). Respect all limitations listed in this document.

FLARM is a collision avoidance system developed by FLARM Technology AG from Switzerland. The FLARM module consists of following main parts: GPS receiver, microcontroller unit, radio transceiver pressure altimeter and optional an external indicator. All electronic parts are integrated into the main display unit cabinet. An exception is the radio communication antenna and the FLARM External Display. Some input is possible via the external display.



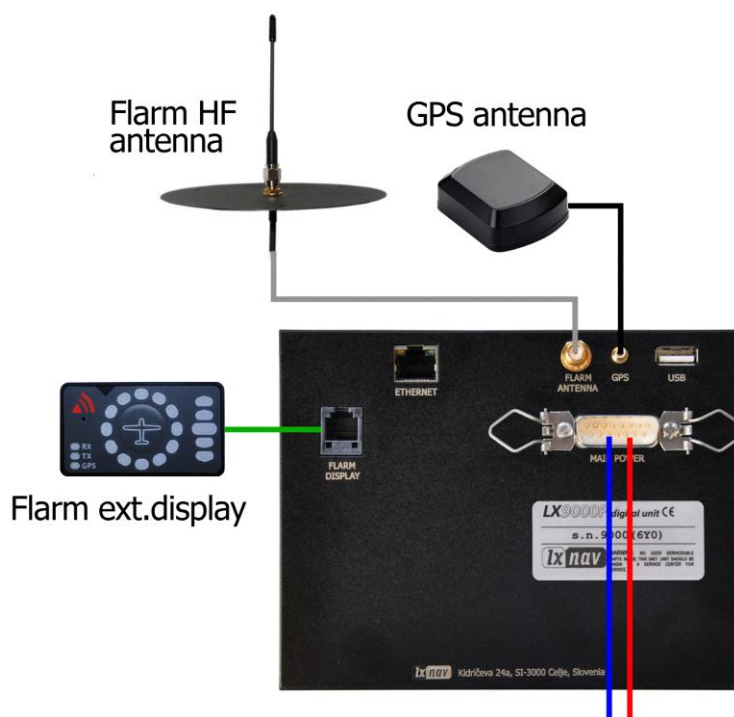
If the display unit does not have built FLARM, an external FLARM connection is possible using the LX5flarm or LX5PF cable for Power FLARM.

#### 8.1.1 Installation



For more detailed instructions on installation, please refer to the installation manual.

The position of the radio communication antenna is extremely important as a bad installation will reduce the system range dramatically. It is highly recommended to install the antenna on the top of the instrument panel with a suitable aluminium round plate having a diameter of about 12 cm used as a back plane and an approximately 10 cm long rubber antenna used as the radiator. The metal plate may be mounted outside or inside of the instrument panel. If carbon is used, use only the top mounting variant.





The antenna position must be mounted as vertical as possible. Use only the original antenna which is always delivered with the unit. Use the original cable to connect the main display unit to the antenna. Never use an antenna without the original aluminium ground plane. If there is no space to install the metal ground plane a dipole variant of the antenna is available. The picture above shows the connected GROUND PLANE antenna. With the LX system a DIPOLE antenna is included which has an even better performance than a ground plane antenna.

The FLARM external display is a small unit and can be placed anywhere on the instrument panel. To fix the device, use self-adhesive tape on the back of the device. For installation on the top of the instrument panel a suitable box is available.

### 8.1.2 FLARM Update Procedure

The FLARM is updated via the SD card/USB stick. From the FLARM webpage ([www.flarm.com](http://www.flarm.com)) download the appropriate file and copy it to the SD card (e.g. cf\_6\_09\_d4ec337.fw). Enter password **89891** and select the FLARM update file. Wait until it is completed.



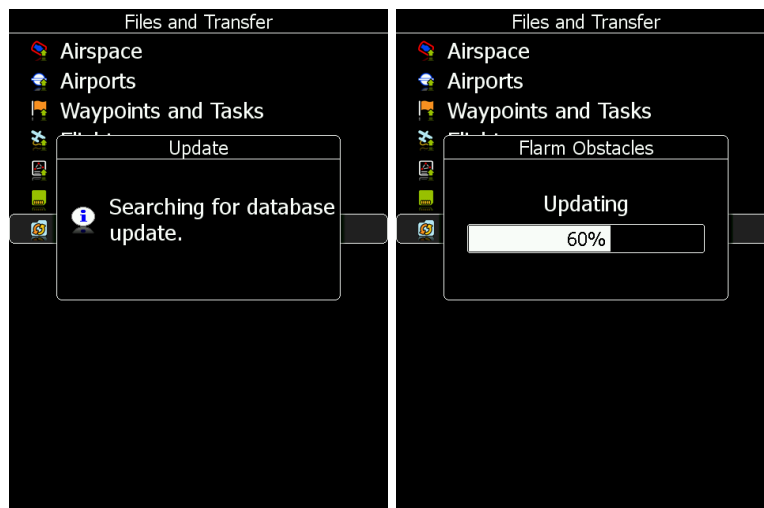
External FLARM modules can be also updated via the LX system. PowerFLARM modules cannot be updated through LX systems.

### 8.1.3 Uploading Obstacles

The obstacle database is also updated via the SD card/USB stick. Since version 6.0 obstacles are not free of charge and they are not preloaded on system. In order to purchase obstacle database, please note the FLARM serial number. The FLARM serial number can be found in Flarm setup dialogue (see Section 5.1.8.2). Go to the FLARM webpage to obtain obstacle the file and copy it to the SD card.

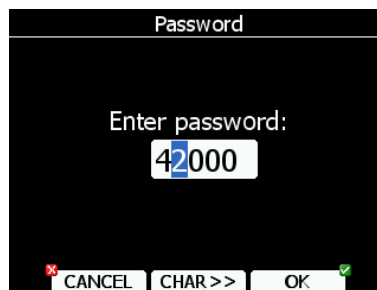
In the **Files and Transfer** menu select the **Update Databases** menu item. Select the obstacle file and wait until the update completes.

If you do not wish to use the obstacle database an empty database is available via [www.lxnav.com](http://www.lxnav.com).

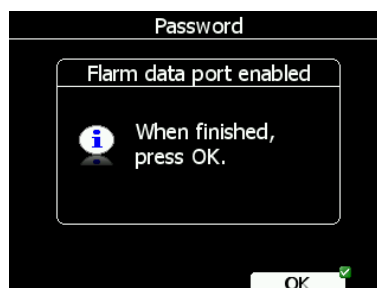


### 8.1.4 FLARM Update Procedure with FlarmTool from PC

Go into password menu and enter password 42000.



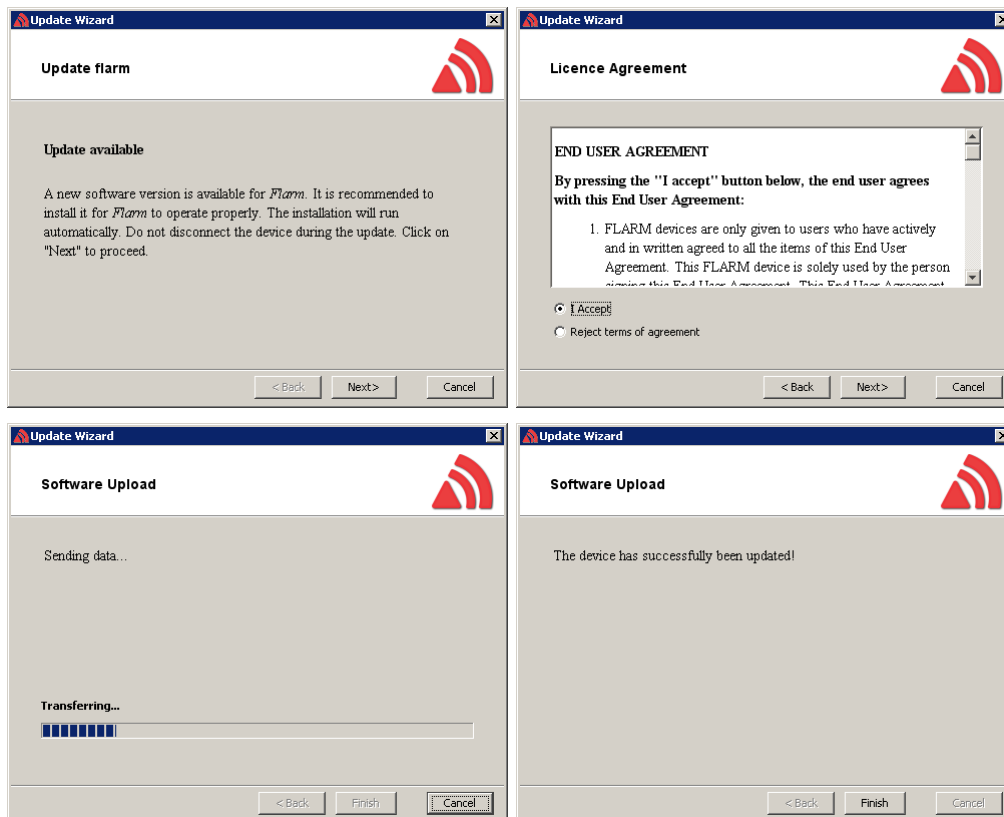
The following message will appear.



Run FlarmTool and select the communication port.



Connect the main display unit to your PC with the LX5PC cable. The FlarmTool will detect the FLARM unit. Please follow the instructions.



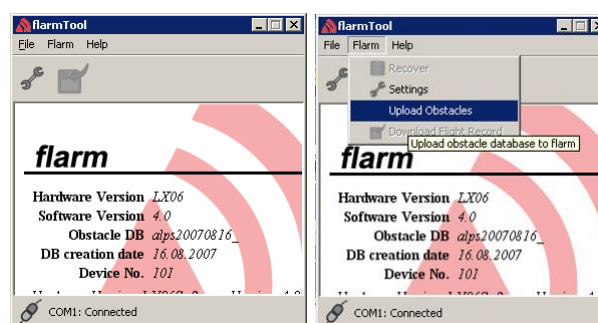
If the FLARM stops working and an update is not possible via the described procedure with password 42000, use following recovery procedure. In FlarmTool choose **Recover** and follow the instructions. On the LX80x/90x enter password 41000.

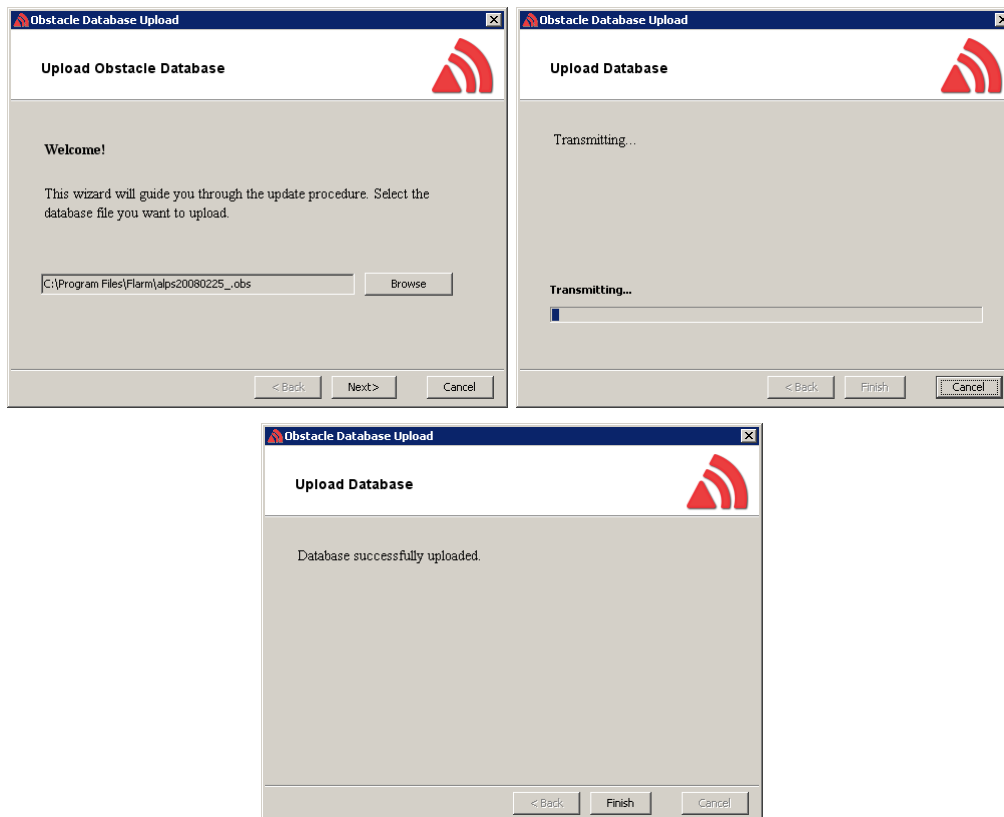


When the recovery is finished press the **OK** button.

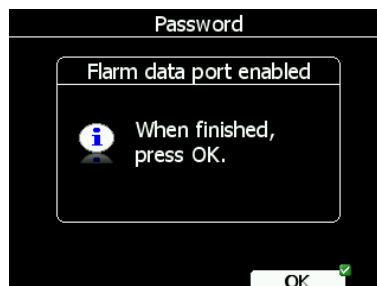
### 8.1.5 Uploading Obstacles with FlarmTool From PC

Go into password menu and enter password 42000. Run FlarmTool and select the communication port. Connect the LX80x/90x via PC cable to your PC





When finished, press the **OK** button on the LX80x/90x.



### 8.1.6 Uploading FlarmNet Files

The FlarmNet information is also updated via the SD card/USB stick. Go to the FlarmNet site ([www.flarmnet.org](http://www.flarmnet.org)), select the **Download latest FlarmNet File** tab and download the file for the LX80x/90x (e.g. 20170819.fln). Copy this file to the SD card.

In the **Files and Transfer** menu select the **Update Databases** menu item. Select the FlarmNet file and wait until the update completes.

## 8.2 External FLARM or PowerFlarm

If main display unit has no internal FLARM, the user has the possibility to connect it to an external FLARM or PowerFlarm. All FLARM/PowerFLARM items will be displayed on the navigation map with same functionality as is with a built-in FLARM.

The external FLARM/PowerFLARM can be connected to the main display unit with a **LX5FLARM** cable.

On the main display unit side LX5FLARM is connected to a 5-pin rounded connector. On the other end of the LX5FLARM cable is a 6-pin standard IGC RJ12 plug connector which is plugged into the FLARM/PowerFLARM port.

In case of a SIMPLE version, the FLARM should be connected to the GPS port.

The External FLARM connection can be enabled at SETUP->HARDWARE->FLARM->PORT. Port should be set to EXT.(PC).

### 8.2.1 Installation



For more detailed instructions on installation, please refer to LX80/90xx installation manual.

External FLARM/PowerFLARM units can be connected to the main display unit with a **LX5FLARM** cable.

On the main display unit side LX5FLARM has a 5-pin rounded connector. On the other end of the LX5FLARM cable is a 6-pin standard IGC RJ12 plug connector, which is plugged into FLARM/PowerFLARM port.



Using an improper type of cable may harm your display unit or FLARM/PowerFLARM units.

### 8.3 ADS-B update

To update the internal ADS-B you need to enter a password 89892 and select the update file, which should be on the SD card / USB key.



## 8.4 Remote Control

The Remote Control stick is available in three different versions: Normal, with a red starter button or with a trim switch.

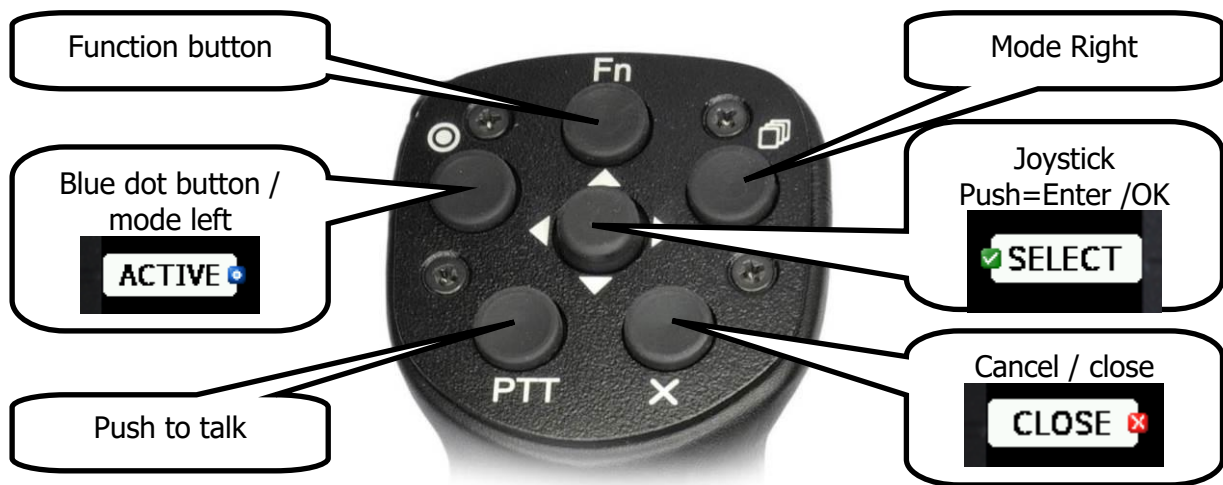


The stick is available also in various diameters: 18 mm, 19.3 mm, 20.3 mm, 24.4 mm and 25.4 mm. All necessary electronics is built into the top of the stick. The four coloured wires from the bottom must be connected to a RS485 splitter. Additionally, two shielded cables are used for speed to fly command and push to talk button (not valid for remote sticks delivered after 2016.)



Remote sticks produced after 2016 come without the SC and VP cables; they are programmable in the LX80x/90x menu.

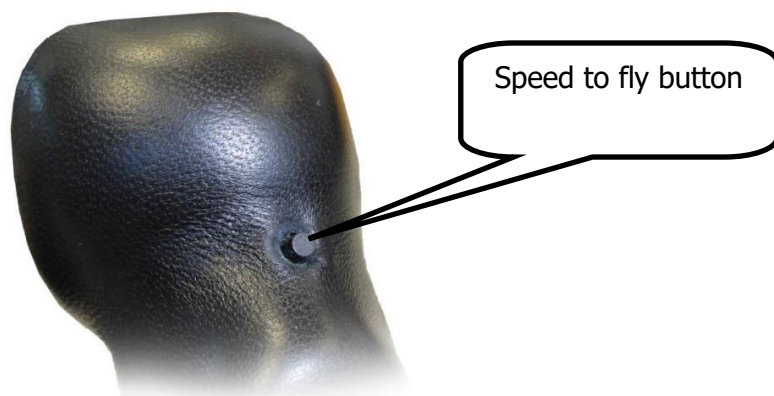
### 8.4.1 Functions



The remote stick has six push buttons and a multi-directional button in the middle. Move the multi-directional button left and right to zoom in and out. Move it up and down to select a different page or to move within a menu. Press it to select an item or to invoke a menu in navigational mode.

On the main display unit some of the speed buttons have a small icon. There are three icons available: a **red cross**, which correspond to the X button on the remote, a **blue dot** which correspond to the upper-left button with a dot and a **green tick**, which is the middle button.

The function button is a custom button whose function can be set by the user (see Section 5.1.8.1).



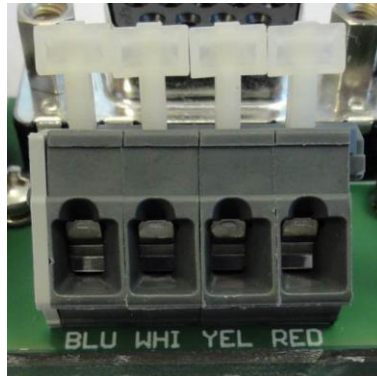
On the front side of remote stick there is a speed to fly button.

## 8.4.2 Installation



For more detailed instructions on installation, please refer to installation manual.

The remote stick is connected to the RS485 bus through a RS485 splitter. Be careful to connect the correct coloured wire to the pin which is marked with same colour. The RS485 is then connected with CAN BUS to your LX80x/90x instrument.



The PTT wires are connected to the radio push to talk input and the SC wire is connected to the Speed to fly input of the vario unit.



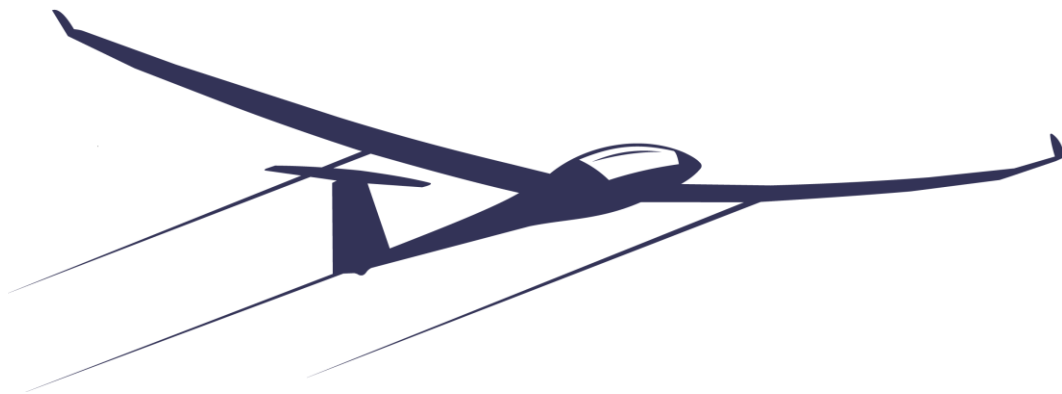
Do not forget to set the speed command input setting to TASTER (see Section **Napaka! Vira sklicevanja ni bilo mogoče najti.**).



After installation there is no special setting required on the main display unit as the remote stick will be automatically detected.

## 9 Revision History

Rev	Date	Comments
1	December 2019	Initial release of the user manual.
2	January 2020	Corrections to English language text.



*The Pilot's Choice*

LXNAV d.o.o. • Kidričeva 24, 3000 Celje, Slovenia • tel +386 592 33 400 fax +386 599 33 522  
[info@lxnav.com](mailto:info@lxnav.com) • [www.lxnav.com](http://www.lxnav.com)