Preliminary

LX mini Map II

Vario navigation system

Users manual for version 3.0

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Contents

1 General description

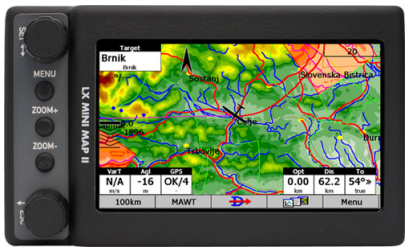
LX mini Map II is **Windows CE 5.0** running device which is supported by sunshine **readable** color display with **backlight** and **touch screen.** The unit hasn't build in GPS receiver and therefore needs an external GPS source. The unit is **designed and produced** by LX navigation and therefore meets all glider pilot requirements. Only high quality materials and components are used and this fact guaranties a long life time and also availability for many years.
SD card solution makes possible to run navigation programs **directly from S**D card, after using of auto run function, which is factory implemented. Immediately after power on, the unit is ready for use, without any pilot manipulation.
The program can be also executed from internal flash. LX navigation offers suitable tools which make installation to flash easy and simple. See http://www.lxnavigation.si/avionics/downloads.html
A simple mounting solution which consists of a gooseneck and metal holder is available as an option.

1.1 Running programs

The programs which can be used as navigation programs are listed below:
-SeeYou Mobile
-Strepla
-Winpilot
-Pocket FMS
-Free ware programs: XCsoar, LK8000 see also para 8.

1.2 LX Mini Map II HW concept

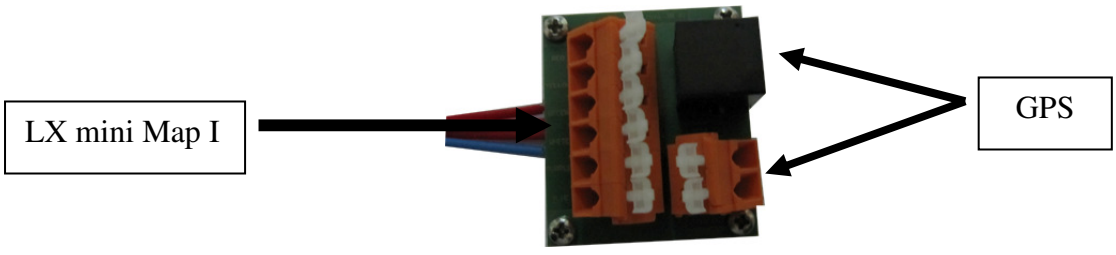
The unit consists of a plastic housing which also includes three push buttons and two rotary switches. Function of rotary switches are clearly marked. Every unit comes also with two labels and this makes possible to use custom solutions.
One USB mini connector is used for power inlet and as a data port. COM 1 is wired. Standard delivery includes a cable which has one USB mini and four open wires at the opposite end.



Port is RS 232 standard and not USB.

1.2.1 Basic Junction box

The unit makes possible to connect GPS source via 6P telephone type connector or after using of two spring terminals. On another side the unit connects LX mini Map II.



2 Getting started

The unit is ready to operate after successful installation and is powered on by master switch. The unit doesn't use internal memory to store program files; all program files are stored on SD cards.

Note!
Eventually delivered programs are **not licensed**, so the owner is obliged to arrange licensing by his own.

The **auto run** function makes possible that the navigation program will start automatically after power on; under condition that SD card is present during booting. This reduces customer manipulation to a minimum.

2.1 GPS connection

GPS signal in form of NMEA at RS 232 level should be applied to data **input marked** wire of cable set.
To arrange a plug and play solution, a junction box is offered. Possible GPS sources:
-Colibri, LX 20m VL….
-Colibri II
-LX 5000, 7000, LX 7007, LX 7007 C…
-Flarm: Red Box, Mini Box….

Note!
Exclusively **COM 1** of LX MM II computer is available on connector.

2.2 LX mini Map II system setup

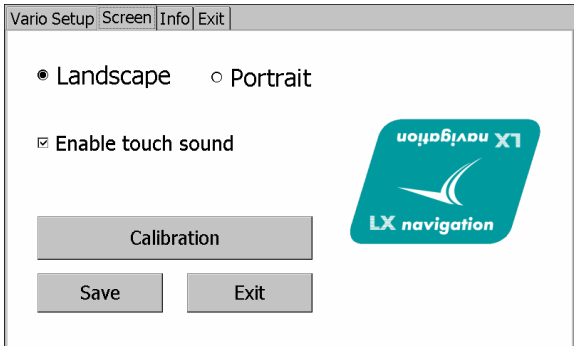
Every unit comes from the factory with preloaded **LX Service** program which makes possible to define some system parameters. The access is absolute simple after click on short cut which is available on the desk top of the unit. To access desk top **remove SD card** and power on Mini Map, or simple exit from navigation program.

2.2.1 Mini Map II Setup

Setup is available after double click on Service icon. Display orientation alters and touches screen calibration are offered. Message searching….. doesn't matter.

2.2.2 Setting Screen

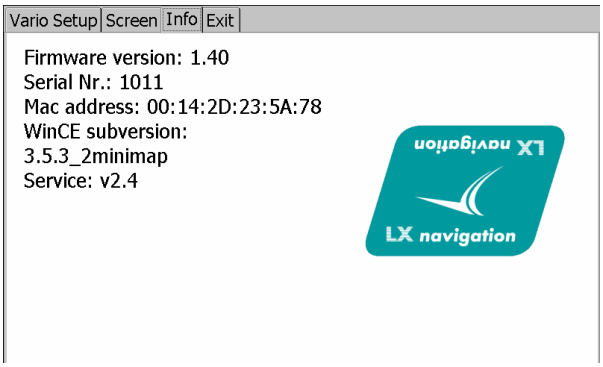
To enter LX mini Map II preferred orientation use Landscape or Portrait function. To recalibrate the screen, run Calibrate and follow instructions.



Note!
Not necessary by programs which support mentioned option.

Enable touch sound command will activate or deactivate sound which will appear after every touch.

2.2.3 Info



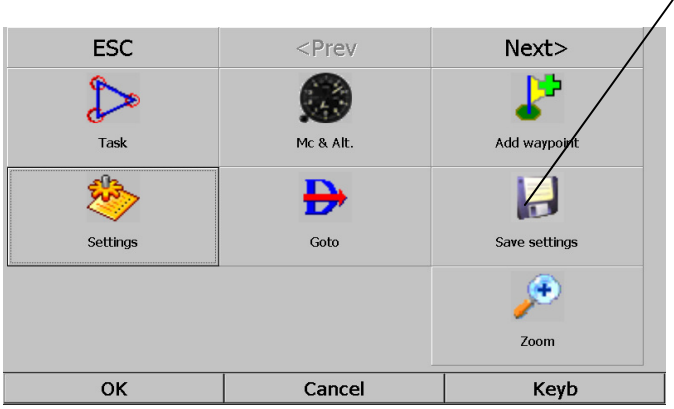
Shows firm ware version of LX MM microcontroller and service program version.

3 Interaction LX mini Map II and SeeYou Mobile

See you mobile can be used in all three versions of LX mini Map II.

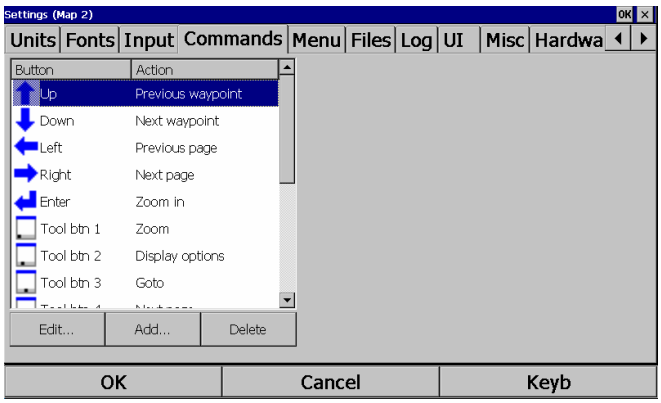
Important!

After changes in setup have been provided, is absolute necessary to save changes, by Save Settings command, otherwise the settings will be lost after power off.

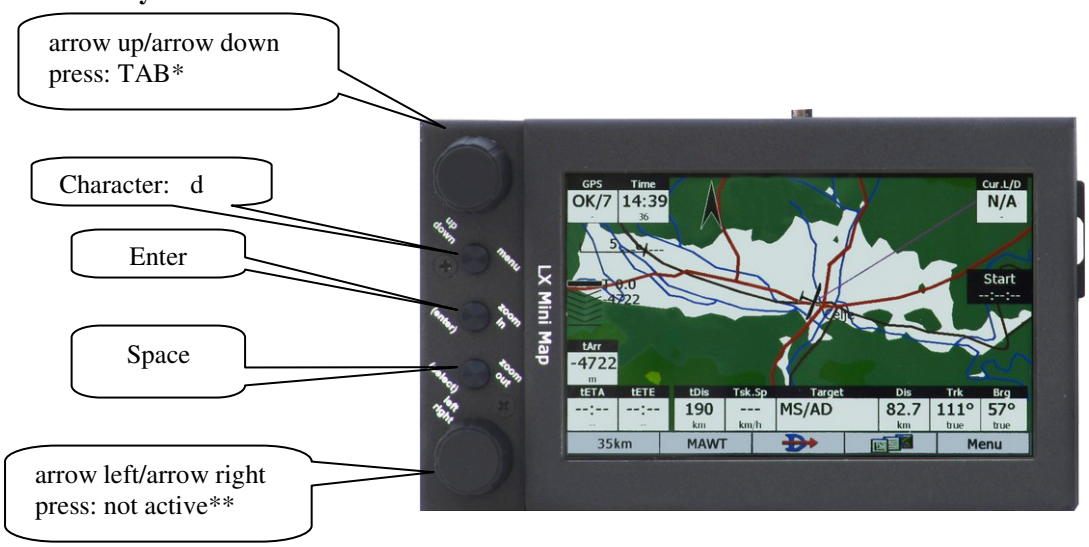


3.1.1 Keyboard customization

SeeYou Mobile menu **Commands** makes possible to customize LX mini Map II keyboard regarding to customer personal requirements.



3.1.1.1 Keyboard Module

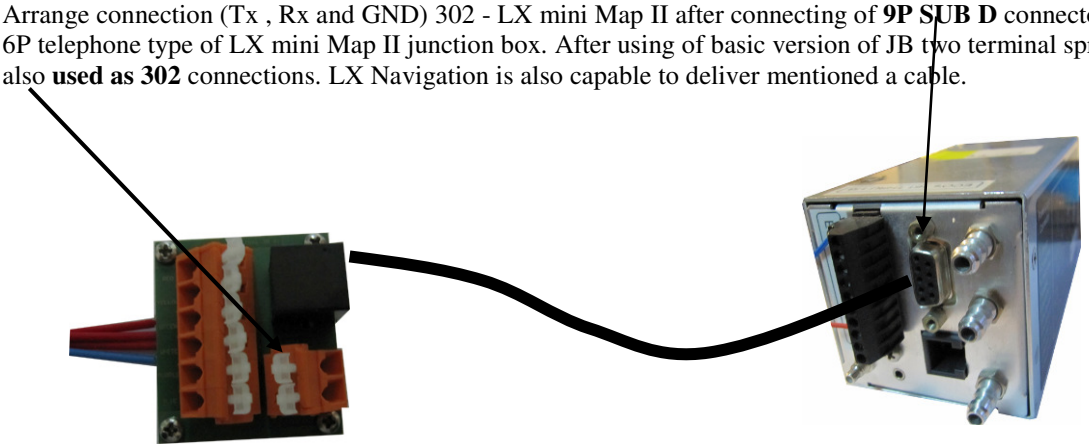


4 LX mini Map II and CAI 302

CAI 302 can be used as GPS source for LX mini Map II. Please respect following limitations:

- Use cable set marked as **COM1,** this will connect 302 directly to MM com 1 (com1 cable set is an option which should be claimed by ordering)
- Use setting **COM 1/4880 bps** on the program (SeeYou, Winpilot…)

Arrange connection (Tx , Rx and GND) 302 - LX mini Map II after connecting of **9P SUB D** connector of 302 and 6P telephone type of LX mini Map II junction box. After using of basic version of JB two terminal springs can be also **used as 302** connections. LX Navigation is also capable to deliver mentioned a cable.

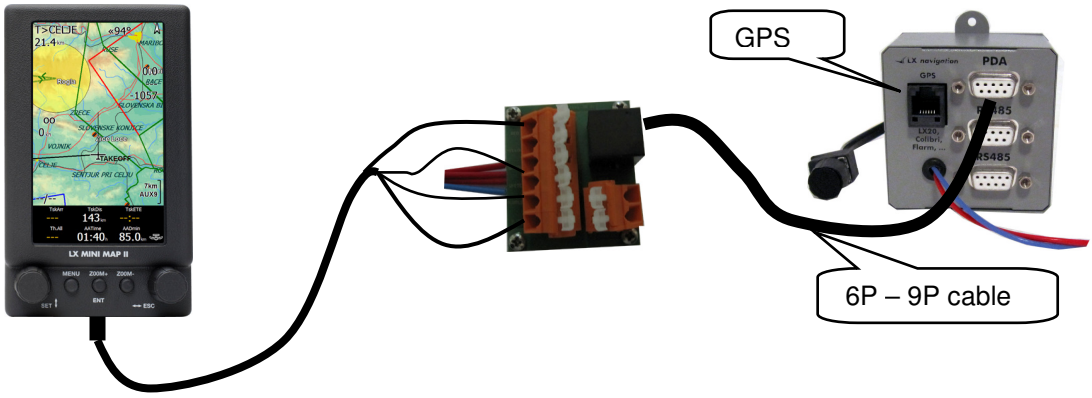


See chapter Cable set for details.

5 Connection of LX 1606 and LX 166

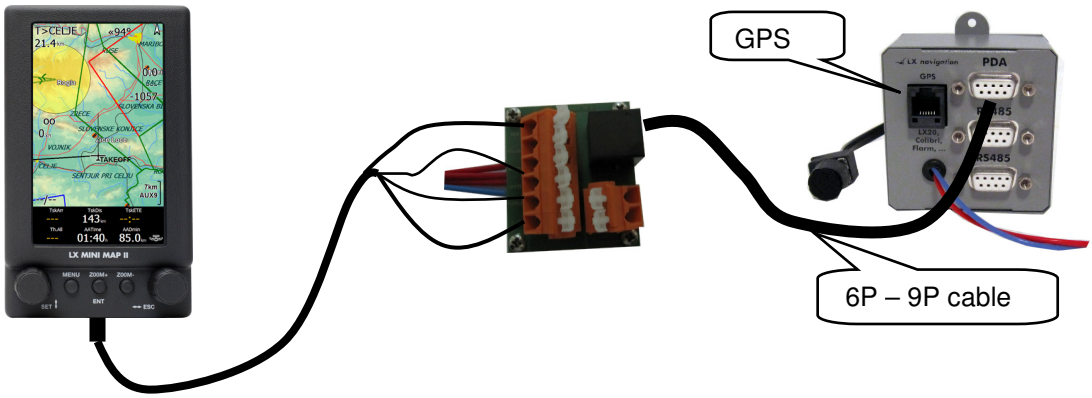
LX 1606

Plug and play connectable if Junction box is used. Use COM1 and 38400 bps **obligatory.**



LX 166

Plug and play connectable if Junction box is used. Use COM1 and 19200 bps **obligatory.**



Connection of LX 7007
Ask for cable.

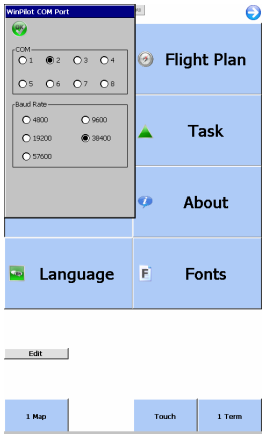
6 Map II and Winpilot

There are two versions of Winpilot, WP pro and WP advanced. WP pro isn't capable to operate in conjunction with LX Vario and WP advanced offers this feature.

6.1 Important settings

It is recommended to set Com 2 and 38400 bps for GPS data input. Under some special conditions also COM 1 can be used.

Important!
After need of **Com 1**, a **special cable set** with wired Com 1 is necessary. Connection of Cambridge CA 302 requires mentioned solution.



6.1.1 WP and LX Mini Map II

Operation of Winpilot Pro and LX Mimi Map II needs following settings:

- COM 1 on Winpilot baud rate should match GPS source

7 LX mini Map II and LK 8000

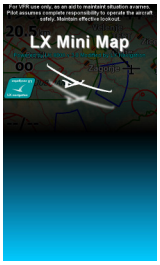
LK 8000 is a free ware program developed by Paolo Ventafridda (http://www.lk8000.it). LX Navigation has made some additional development on the program to ensure following:

- Efficient program management after using of Mini Map **keyboard**

Such an upgraded LK 8000 program you can download from www.lxnavigation.si or you can ask for it by LX Navigation.

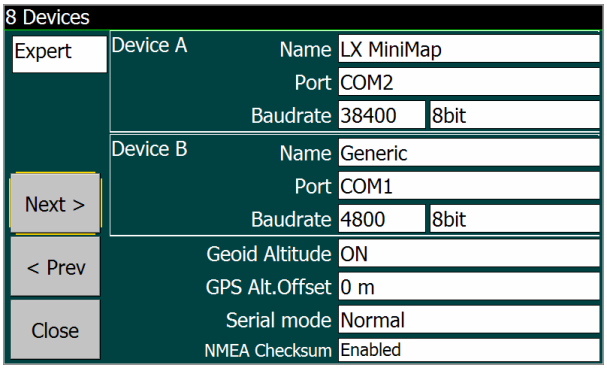
This short form guide doesn't replace LK 8000 original manual which you can download from www.LK8000.it

7.1 How to identify LX Navigation version



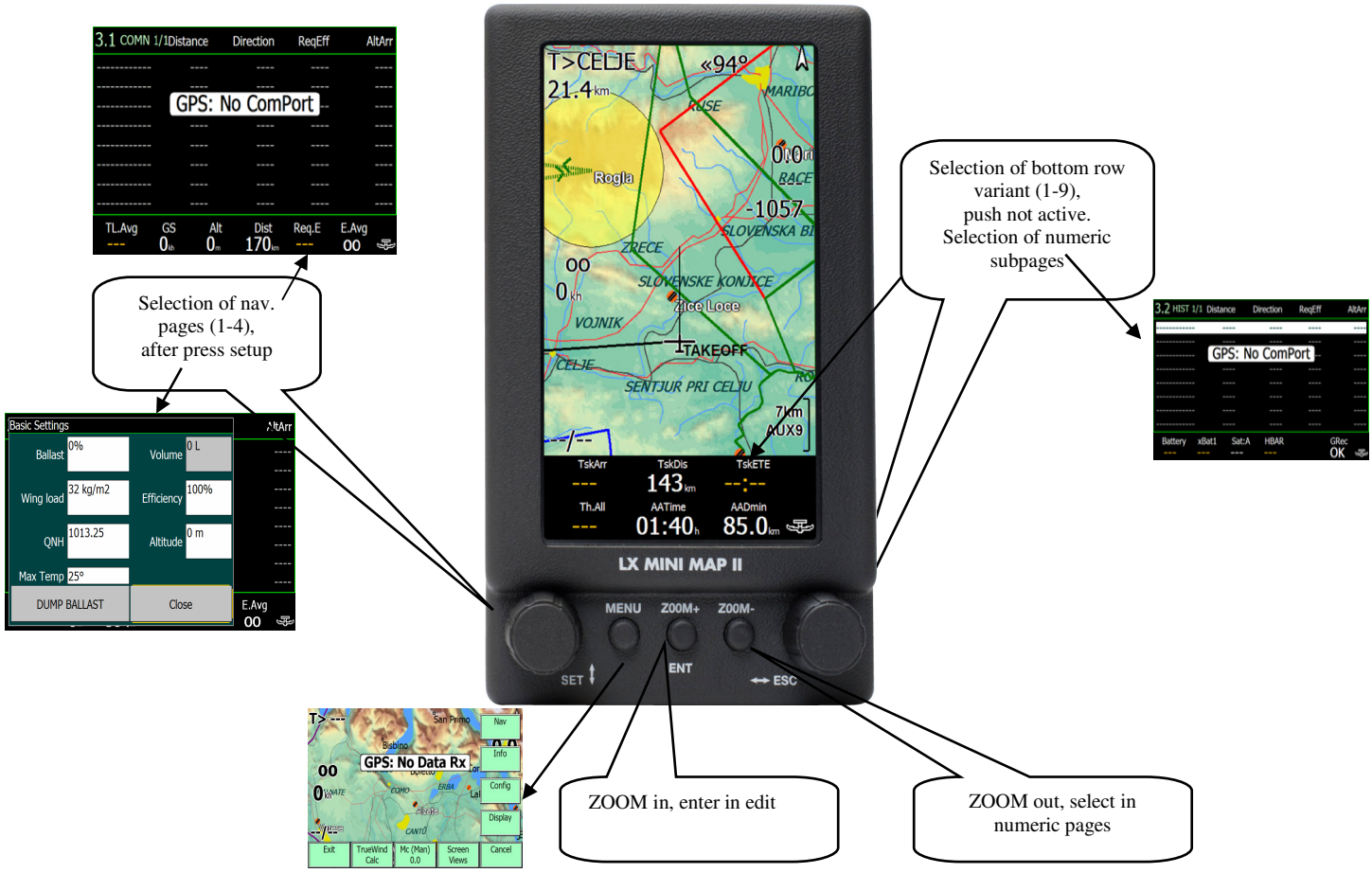
LX navigation version is clearly visible after LK 8000 inscription.

7.2 Selection of GPS source



Use always **Device A ; COM 1**, baud rate should match to GPS source

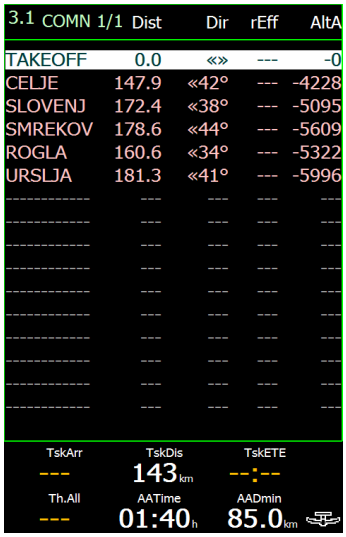
7.3 LK 8000 and Mini Map II keyboard interaction



7.3.1 Selection turn points and airports after using of LX MM II keyboard

Out of graphic page rotary switches may change their functions and become up/down selector and left/right key. This makes possible to arrange selection of turn points and airports directly. After rotating of ↕ marked key numeric pages will become active.

Example:
-press select button (a very significant message on display)
-use ↕ to select point of interest
-select after enter

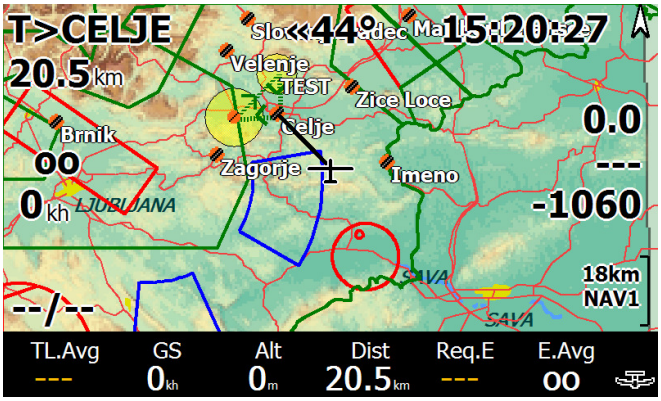


Note!
After no action for more than 4 seconds,
Select will become not active

During select active period the ↔ key can be used to to change sorting method.

7.3.2 Zoom in and Zoom out

Changes zoom of the graphic screen, the same button will produce enter in setup



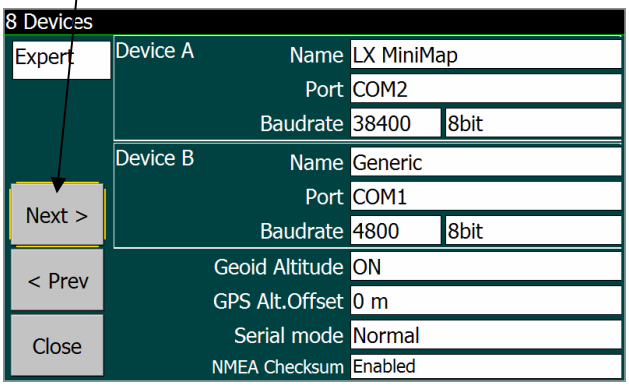
7.3.3 Keyboard operation in details

After using of LX keyboard nearly all commands could be executed via keyboard. During navigation use commands as described in 8.3.

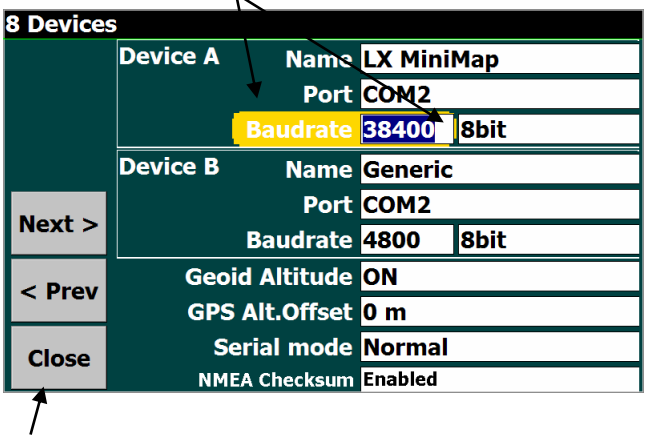
7.3.3.1 Using of Keyboard in System Setup

After press on Menu (**menu** key, **Config 2/3** and **System Setup** by touch), the 23 system setup menus will be offered. The rotary switches and the keys will become following functions.

Setup **number selection**: mark **next** or **previous** (by rotating **up/down**) and after every press on **enter** new setup number will be offered.



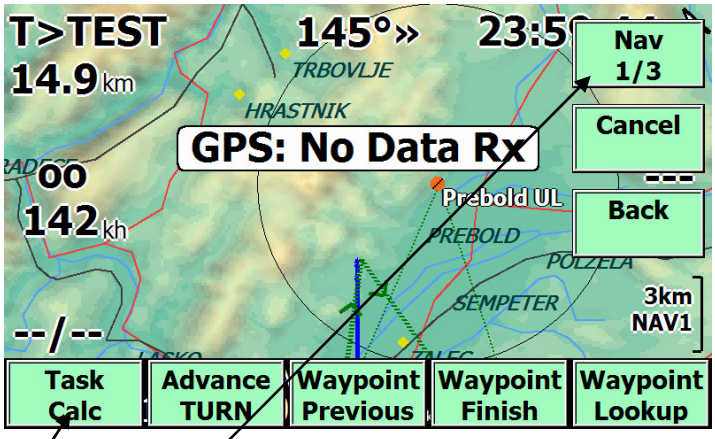
Menu selection (scroll): use Up/Down **to scroll**
Item change: Left/Right **to change**
Enter: for **confirmation**
Double click on Menu button: **escape** (after using of this command the already made changes will **be lost**.



To leave menu: high light **Close** (Up/Down) and press Enter

7.3.3.2 Keyboard in Nav Menu

Activate NAV menu of interest after using of **Menu button** and touch screen.
The philosophy is similar as described in 8.3.1.1.
To select box of interest you can also use ↕



Actions:
Push button: Menu
Touch: to select further **items** (1/2 and 1/3)
Touch: to open **menu** of interest

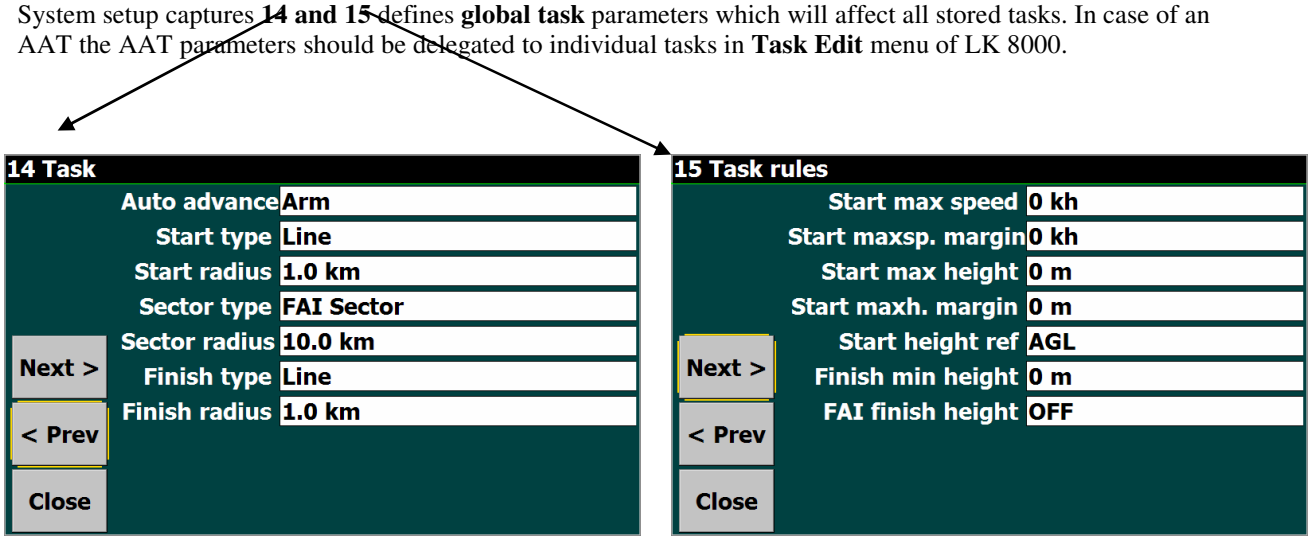
7.4 Task management

LK 8000 offers a bright spectrum of useable functions connected with task management of a glider pilot task. This capture describes how to input task and also how to execute the task during competition flight.

Note!
Nearly all activities connected with task management could be carried out by LX mini Map II keyboard or LX Remote.

7.4.1 Task global settings

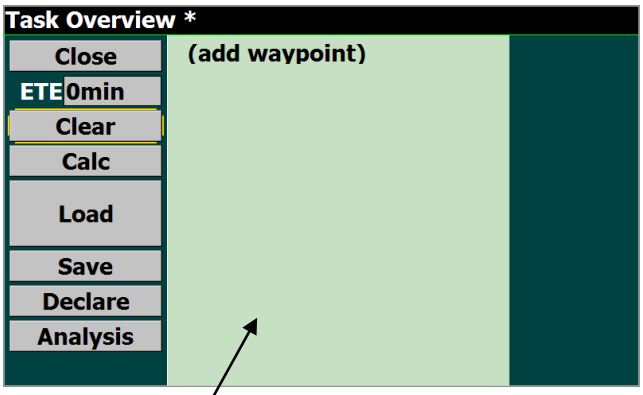
System setup captures **14 and 15** defines **global task** parameters which will affect all stored tasks. In case of an AAT the AAT parameters should be delegated to individual tasks in **Task Edit** menu of LK 8000.



Auto Advance: defines manner of change over in turn point or start sector.

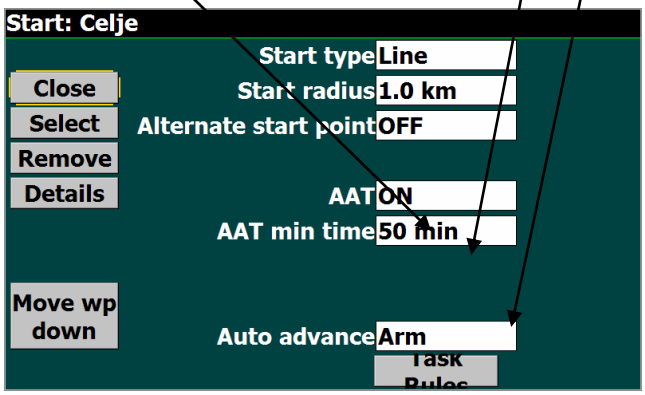
7.4.2 How to input a new task?

Task Edit menu is a sub page of NAV menu in fact **NAV 2/3** menu. The menu will become operative after click on **TASK EDIT** button of touch screen.



After press on Task Button, **Task Overview** window will open and last flown task will be listed. By no task only (**add waypoint**) will be offered. Double click on add waypoint will open the dialog and waypoint selection could start. The first selected point is task **start point**. During selection process the pilot should define if a conventional speed task or an **AAT** will be flown. After AAT selection (AAT ON), **AAT time** given by competition director should be entered. AAT sector geometry can be annotated to correspond to individual sectors of the task. Flying an AAT makes change over philosophy of high importance, so define in **Auto advance**.

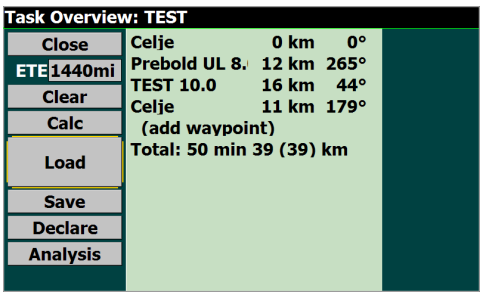
-**Manual:** change over will happen promptly after command execution
-**Auto:** change over will happen automatically after sector will be reached (suggested for racing task)
-**Arm:** the pilot is able to arm task start before reaching the line, after reaching the line, start will be executed automatically, change over to next turn point inside point sector is manual
-**Arm Start:** arm is valid only for start



Note!
It is important to select a turn point file which includes turn points of interest in **System setup** under **number 1** (Site). Remember that LK 8000 is also capable to use **.CUP** files as a turn point data base. The turn point files should be simple copied into **Waypoints** folder of LK 8000.

The last point is **finish line** and this should be declared before point selection.
Rest commands:

Clear: will **clear** all points of the task
Calc: offers **task calculate** menu, described separately
Load: will **load** an already stored task
Save: will **save** active task
Declare: will **send** declaration to flight recorder
Analyses: will open flight analysis
ETE: time elapsed is connected with settings done in **Calc** and couldn't be edit from this menu

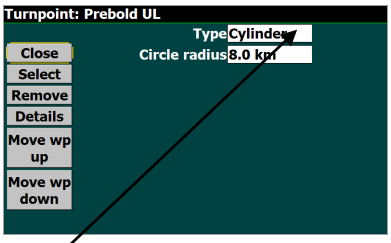


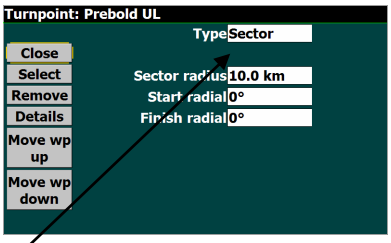
Example of a finally ready task

After start, all turn points finish and all individual sectors are entered, the task is ready to be flown. Close the procedure with **Close** command.

7.4.2.1 Edit of AAT sectors

After click on TP name a window will open where sector geometry can be preset.

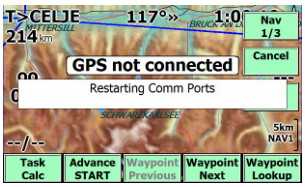


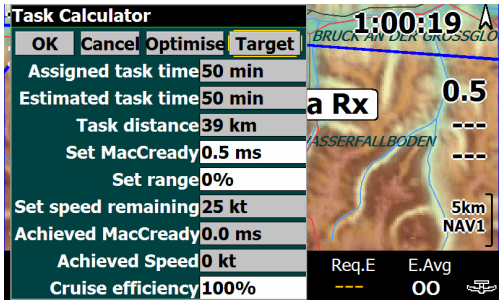


Using of **cylinder** option offers sector diameter input and **sector** makes possible to enter two radials and also radios.

7.4.3 Task Calculate Menu

This menu is available via **Task Edit** menu or from **NAV 1/3**.





Following important task parameters can be entered that way:

Assigned task time: correspond to the time input done in Task edit AAT Time, no adjustment possible, the time will count down after task start

Estimated task time: depends on, MC, Range and Cruise efficiency, this is the time which the pilot will need to Complete the task under above mentioned conditions

Task distance: distance to go from start until finish

Set MC Cready: setting should match predicted weather conditions

Set range: the task default distance can be varied in %, after using of this function the turn points will moved by the program automatic way

Cruise efficiency: the input value is between 75 and 150%, values higher than 100% will reduce task estimated time and vice versa

7.4.3.1 Optimize

An automatic task optimization will follow after using of this function. Estimated task time will be set 5 minutes more than AAT time this is a safety measure to prevent early arrivals. The task distance will be also adapted.

7.4.3.2 Target

Makes possible to move turn points inside sectors of the actual task regarding to pilot personal prediction. More about see 8.6.1.

7.5 Flying a task

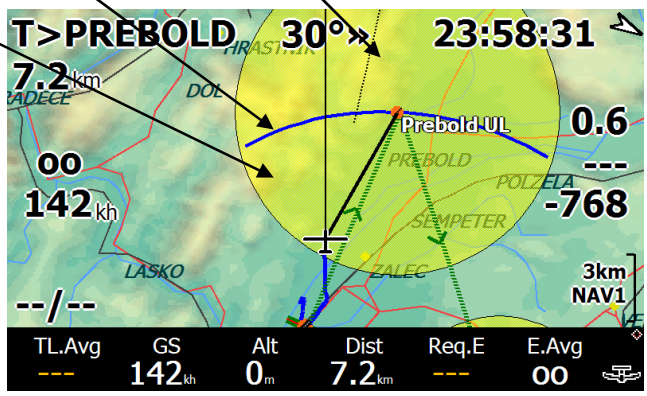
It is recommended to make all inputs connected to a task on ground. Flying a racing task, which have small sectors, what the entire pilot has to do is to manage start and turn point change over in case of a not automatic option has been selected in System Setup. AAT makes all mentioned procedures more complex, due to big sectors and quite a lot of freedom where to switch to next point.

7.5.1 AAT Management

AAT management consists of strategy how deep the pilot will fly into individual sector to reach optimal task speed and not to arrive too early.

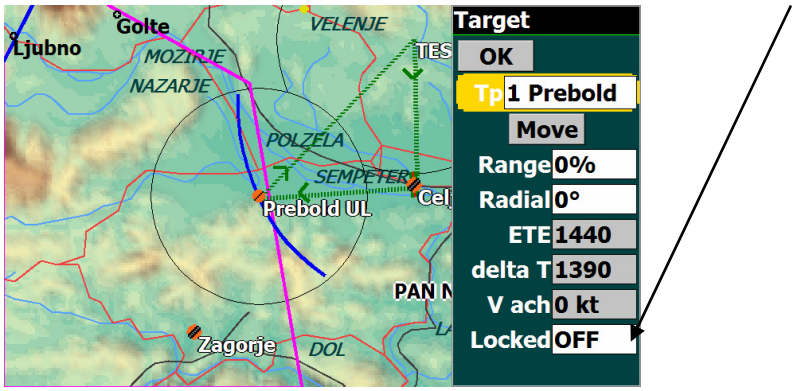
7.5.1.1 Equidistant arc

In every sector a **blue arc** which is going through the centre of the sector defines two areas where the distance will be **less** than default and the area which will **increase** the task distance. So it is not rentable to fly along the arc, the distance will not increase, but the time will be spent.



7.5.1.2 Automatic Move Function

LK 8000 offers a very sophisticated method which is running fully automatic without any pilot assistance.
There are two different approaches. The pilot should choose Lock ON or Lock OFF option. **Lock OFF** will adapt task geometry immediately after the glider will enter the sector and after using of Lock ON option the task geometry remains unchanged until reaching the arc or change over command.

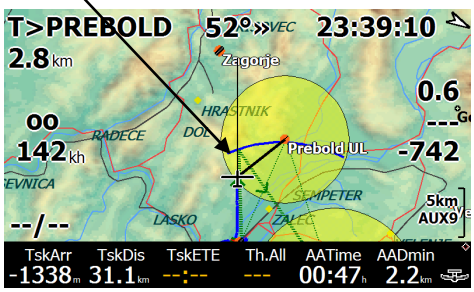


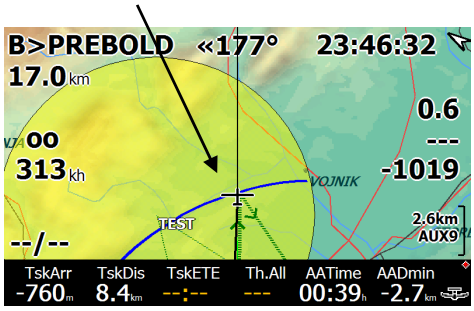
7.5.1.2.1 Using of Lock ON option

The task point will remain tight to TP default position even after the glider will enter the sector. As the glider will reach the arc, the arc will be moved up synchronized with glider position. Selection of next turn point will cause an automatic task modification, glider actual position will, be taken as new turn point. Point move will also happen if change over command will be executed before reaching of the arc line. A significant task distance jump is expected if the change over to next TP happens quite far from original TP position.

7.5.1.2.2 Using of Lock OFF option

Lock OFF option makes task progress even more sophisticated and easy. Immediately as the glider enters the sector a **moved turn** point is offered. The position of such a hypothetical point is defined automatically and is based on position and actual track. During staying in "minus" distance area the point is positioned on the blue arc and after reaching of blue arc, the arc and hypothetical point are **moving symphonized** with the glider.



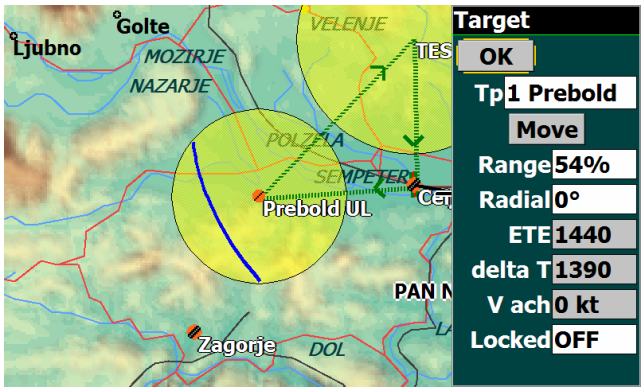


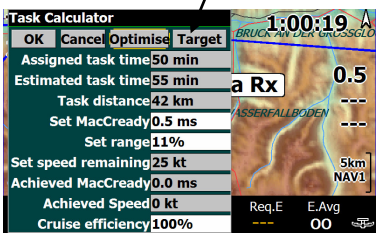
Note!
Flying along blue arc will not increase the distance, to increase the distance fly perpendicular against arc.

Movement will make arc smaller and smaller and will become a point at the end, this point shows maximal distance point of the sector.

7.5.1.3 Manual Move

Manual move can be done on ground and also during flight. There are two parameters which the pilot is able to vary; the range and the radial. Both mentioned adaptations are available in **Target** menu. **Target** can be run from Task Calc menu.

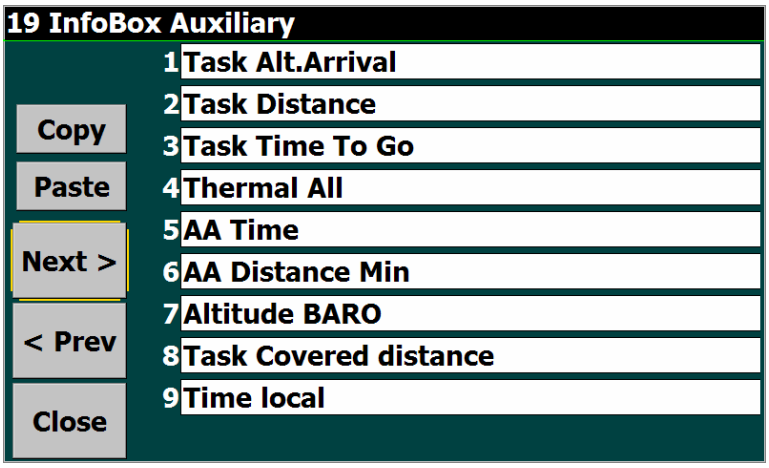




Range: -% decreases the distance and vice versa
Radial: - moves left and + moves right
Delta T: defines early or delayed arrival in minutes

7.5.2 Preparing of FIN 8 and AUX 9 pages of the bottom bar

The pilot is able to prepare above mentioned pages of bottom bar under his personal requirements, after using of System Setup **items 18 and 19**. Preparation of FIN 8 or AUX 9 is nearly mandatory as AAT is intended to be flown. Thre is also page TSK4 which speaks about task statistics, but there are some important AAT data missing for instance AAT time. All missing data can be incorporated into FIN 8 or AUX 9.

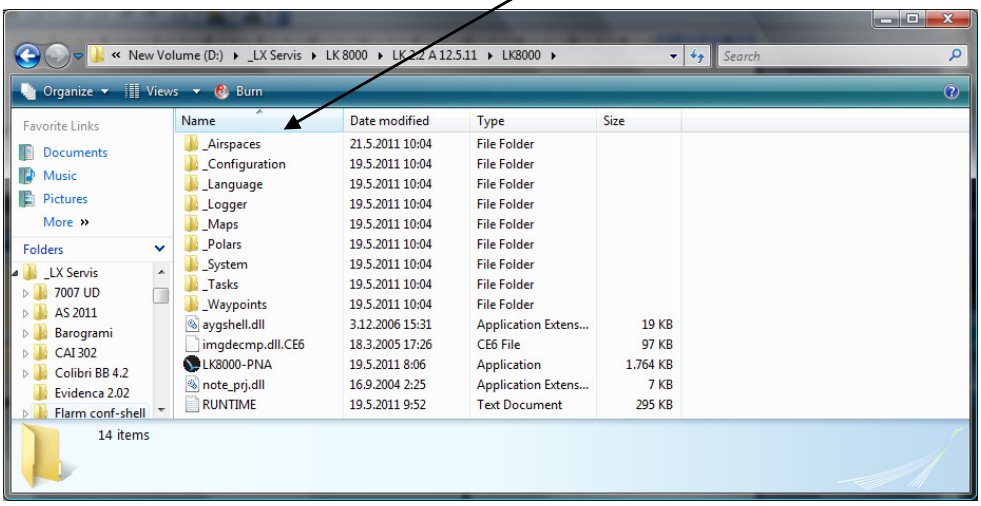


7.6 Airspace and colours

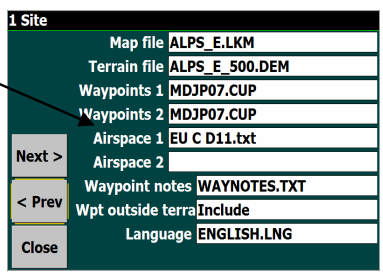
Airspace format in LK 8000 is exclusive Open Air format having extension .txt. This is a most common format for gliding use.

7.6.1 Loading of new airspace file

The airspace files should be copied into Airspace Folder of LK 8000.

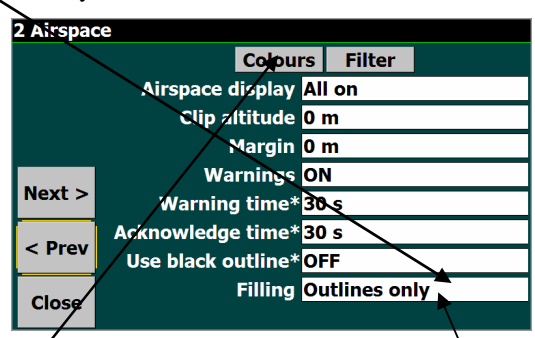


An indirect way can be used after the file is copied into My Documents and after to LK 8000. This procedure doesn't need to take away LK 8000 original card. The pilot is able to prepare his file on PC and copy to another SD card. **Actual file** should be enabled in System Setup 1.



7.6.2 Airspace colours

A colour can be delegated to any airspace. The airspace patterns can be also filled or only lines can represent the airspace. A special option **outline only** will designate airspace sections only with a border. If you set Use black outline to ON, airspaces will be shown only with a thin black line.

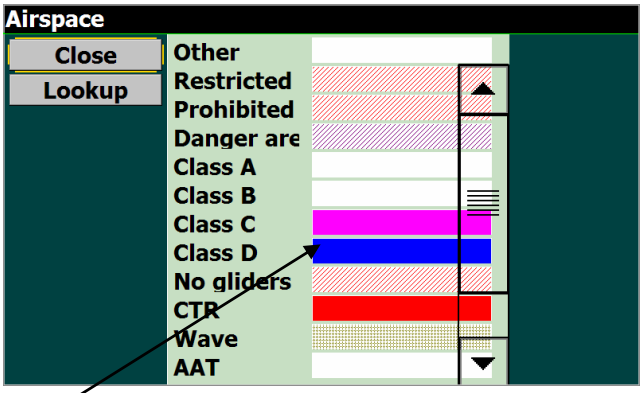


7.6.2.1 Determination of colours

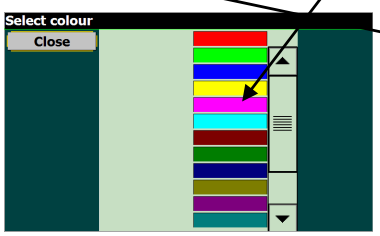
The colors are connected to airspace classification (A,B, C …). So the pilot is able to add any colur from the palette to any class. Some special items are added to the classes as Glider sites, AAT sector and some other options.

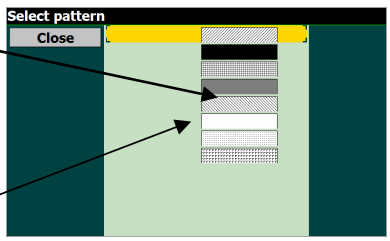
Note!
CTR is defined as class in LK 8000. If you want to use a special colour for CTR this shouldn't have a class designation too, otherwise will be threaded as all other items of the class. Unknown as class designator will also solve the problem.

After click on **Colours** following window will open:



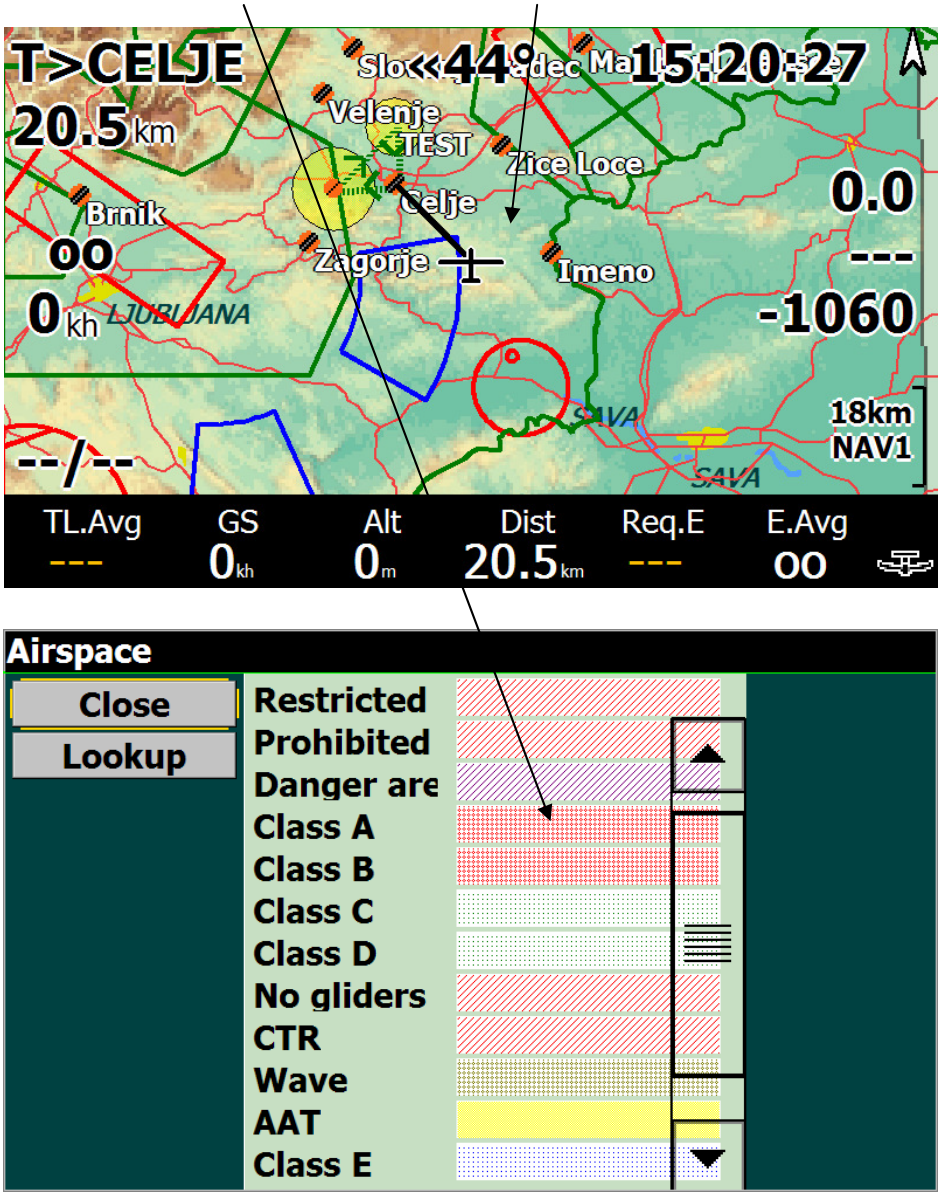
To alter colour click on the **bar** and the whole **palette** will be offered. After clicking on a colour a pattern selection will follow, select **pattern**. To remove patterns and to use only colored airspace borders, select filling as **Outlines only**





Note!
Selecting the **no pattern** in pattern selection will still fill the borders of the airspace transparently.
It may cause irregular display of airspaces if they cross each other.

The default **selection of colours** will show **airspaces like this**:



Note!
You can only adjust color of an airspace if it has defined a class in the OpenAir file.
Otherwise adjusting the color is not possible.

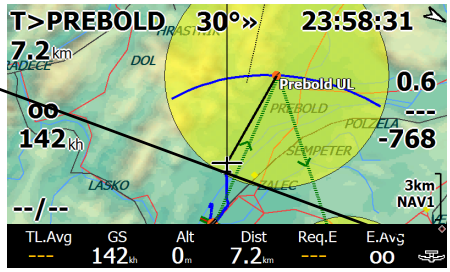
Important!
On www.lxnavigation.si you can find airspace sections prepared in .txt format which are capable to be used in LK 8000.

7.7 System Configuration in details

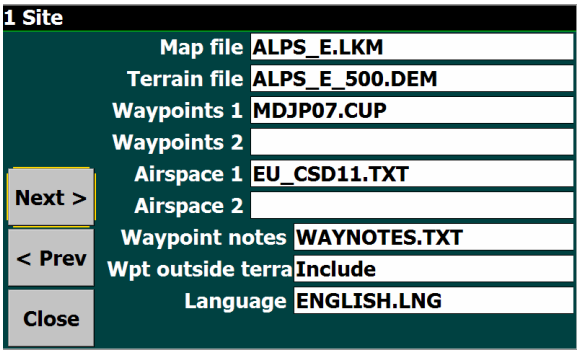
Note!
All actions of selections can be done after using of ↕, ↔, Escape (valid for Mini Map pro) and Enter key of MM keyboard.

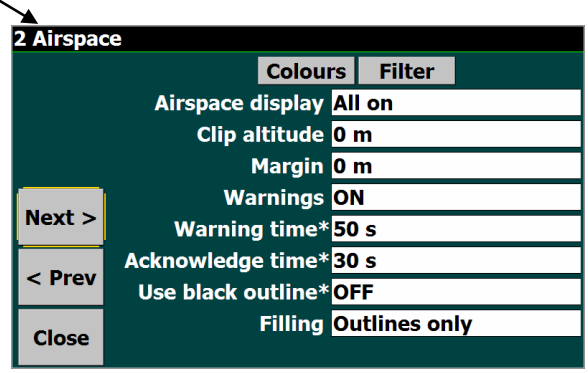
Setup defines system parameters and therefore it is obligatory to pass the materia after the system installation. To enter system setup provide following:

-click on glider symbol or press Menu button of MM
-double click on **Config** icon
-click on **System Setup** icon
-the last used **item** of setup will open



Setup consists of 23 items and **each item function** is present in upper left corner of the display this makes easy adaptation of some system parameters in future.

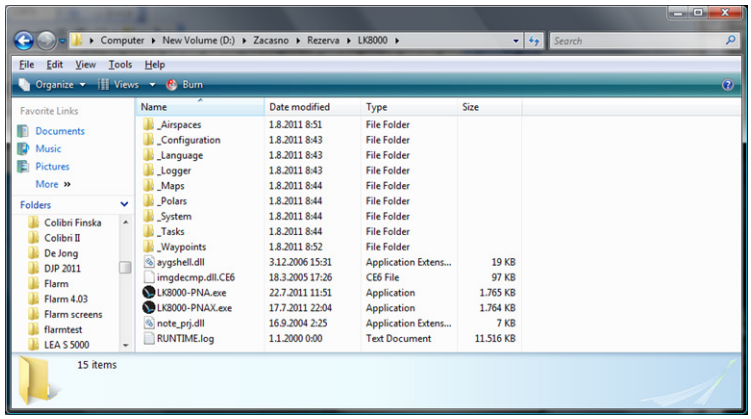




Use Next, Previous and Close commands to browse through setup items. All also available after using of ↕ rotary switch and enter of MM keyboard.

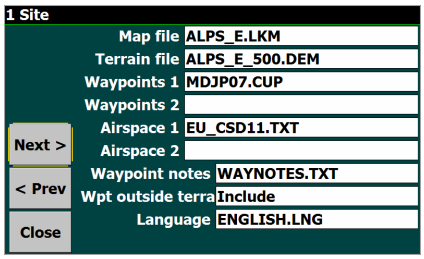
7.7.1 Setup 1 "Site"

Mentioned setup makes possible to select appropriate **terrain, topography, waypoint** and **airspace** files. Nearly all terrain and topography sections are already copied on the SD card which comes with the unit in folder **Mapterrain.** There is no installation process at all; all mentioned files should be simple copied into appropriate folders of LK 8000 SD card. Into **Maps** copy both terrain and topography files (xxxx.LKM and xxxx.DEM). Terrain files which included bigger numbers covers more area (xxxx 1000.DEM approximately 1000x1000 km).



Waypoints in **.CUP or .DAT** format are accepted, waypoints having attributes land able will be also listed in near function.

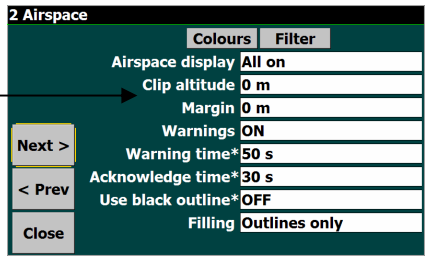
Airspace and Waypoints selections make possible to enable **two sections** at the same time. In that case a combined data base which consists of two waypoint or airspace files will be active. Using of **Waypoint notes** you are able to define your home data even after turn point file will not include those data. See also LK manual For details see LK 8000 manual. Waypoint outside terrain offers **Ask**, **Include** and **Exclude** option. Language selection is possible after using of **Language** menu.



Note!
Acceptable airspace format files are exclusively in so called **Open Air format** those files have extension .txt. LX Navigation offers actual airspace files in .txt format on www.lxnavigation for free.

7.7.1.1 Airspace

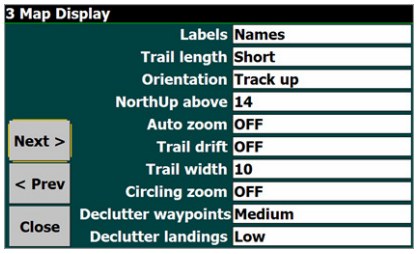
All about selection and airspace format see 8.8.1. The basic selection is offered after enter into Airspace menu and extensions are available under Colour and Filter.



-**Airspace display** offers four options:
All on, will display the complete airspace at the same time
Clip, only airspace below user defined altitude in Clip alt. will be active.
*Auto,*only airspace at the current altitude regarding to Margin setting (+and -)
*All below,*only airspace below the glider will be shown.
-Clip altitude,valid only if clip mode has been selected.
-Margin, valid after Auto setting.
-Warnings, offers **on** and **off** solution.
-**Warning time,** defines how many time before reaching airspace a warning will be activated.
-**Acknowledgment,** setting of time period in which and acknowledged airspace warning will not be repeated.
-Black outline, ON will present all AS sections as a black outline, no filling and colours.
-**Filling** makes possible to define as outlines only or patterns. In that case colour setting will define colours. See 8.7.2 for details.

7.7.1.2 Map display

This menu speaks how different information will be displayed over the map.

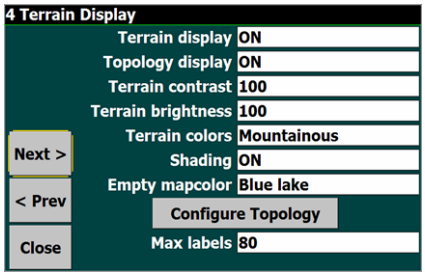


-Labels, setting will optimize waypoint designation.
-**Trail length,** will define trail length.
-**Orientation,** will define map orientation.
-**North above,** defines automatic change over to north up.
-**Auto zoom,** suggested setting is no.
-Trail drift, suggested setting is off.
-**Trail width** from 1 to 50.
-**Circling zoom**, sets different zoom factor during circling period.
-**Declutter** waypoint prevents display overload.
-**Decluter** landings, prevents display overload.

Note!
Waypoints are displayed until zoom 13 km and land able until zoom 23 km. Higher zoom levels remove waypoints from the display.

7.7.1.3 Terrain display

Terrain may be displayed after using of different settings of this menu.



-**Terrain display** makes possible to enable or to disable terrain
-**Topology display** enables or disables roads, rivers, railways and towns
-**Terrain contrast** in steps from 1 to 100
-**Terrain brightness** in steps from 1 to 100
-**Terrain colours** makes possible to select different terrain options which corresponds to pilot personal requirements

-**Shading** has only option ON and OFF
-**Empty mapcolor** defines background colour after no terrain presence
-**Max labels** defines maximum number of labels

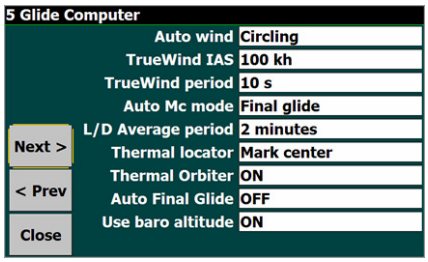
7.7.1.3.1 Configure topology

Presence or disappearing of different topology elements is connected with zoom status. The zoom values at which individual topology elements will appear respectively disappear is defined in **Configure topology** menu.

7.7.1.4 Glide computer

Some important system parameters are to be set in this menu.

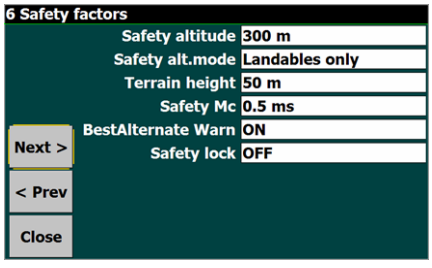
Note!
It is recommended to use baro altitude ON in case of a GPS source which is capable to send baro based altitude data. Set LXWp data on LX units. Also use baro altitude on in MM KB/V configuration.



-**Auto wind**, defines method of wind calculation.
Circling, this method uses GPS position fixes to estimate the wind based on drift, typically while thermalling.
ZigZag, this method uses GPS position fixes and true airspeed measurements to estimate the wind, typically during cruise.
Both, combines circling and ZigZag.
-**True wind IAS,** setting of IAS you will fly after using of True wind method (see LK manual True wind Calculation)
-True wind period, defines period in which you will keep IAS stable during True wind calculation.
-Auto MC mode, defines which auto MC algorithm will be used.
Final glide, adjusts MC for fasters arrival.
Average climb, MC auto setting based on total average.
Both, uses average on task and fastest arrival in final mode.
Equivalent MC,
-**LD average period**, defines time slot in which L/D average will be calculated.
-Thermal locator, will show you location of thermals.
-Thermal orbiter, offers on and off option.
-**Auto final glide,**
-Use baro altitude, enables using of baro altitude signal if present.

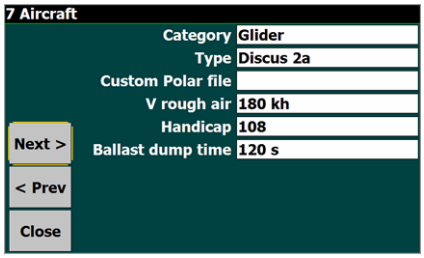
7.7.1.5 Safety factors

Some safety factors which influence flight safety are included in this menu.



-Safety altitude, will increase your final glide required altitude.
-Safety alternations mode, you can define which types of points will be included as alternate points.
-Terrain height, the height above terrain that the glider must clear during final glide.
-Safety MC, for point reach calculations to alternates and airports.
-Best alternate warning, ON and OFF option.
-Safety lock, will disable setup entry during flight.

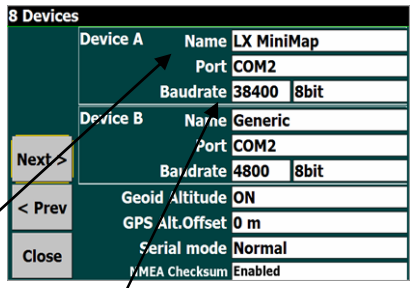
7.7.1.6 Aircraft



-**Category** defines rank of the aircraft
-**Type** input is extremely important after the instrument is intended to be used in the glider*
-**Custom polar** file can be added after input of custom polar file see LK Manual page 108
-**V rough air****, speed limit in rough air should be entered
-**Handicap****, handicap factor by scoring
-**Ballast dump time****, time which is necessary to dump the ballast

*to each glider type offered in the library, belongs an individual polar and this should be carefully selected. After using of MM KB/V version the polar selection should be also done in **LX service** program, this selection is valid only for vario unit and has **absolutely no influence on final glide**. The polar selection in LX service program will influence speed command only.
**should be entered by pilot after using of flight manual and sporting code (handicap)

7.7.1.7 Devices



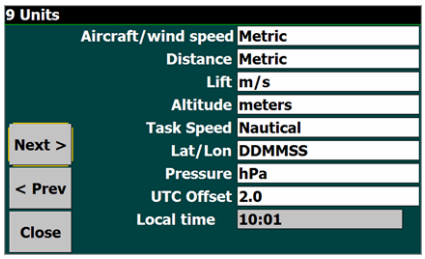
The unit is offering **two inputs** for GPS signal called as devices A and B. It is suggested to take Device A as a main GPS input And Device B as a spare GPS input. After loosing of GPS signal on port A the unit will switch to Device B.
MM offers two COM ports, COM port 1 and COM port 2, other offered ports are not wired, so never select higher than COM 2.
There is a significant difference between COM 1 and COM 2. COM 1 is wired directly to the GPS source and COM 2 is wired to the into MM built in microcontroller. So after selection of COM 2 it is obligatory to select Name as **LX mini Map II** and baud rate **38400**, GPS source baud rate doesn't matter. COM 1 requires baud rate which match GPS source baud rate.

Note!
LX MM KB/V requires COM 2 and LX mini Map II as obligatory. There are two types of harness, one for COM 1 and other for COM 2.

Use serial mode as Normal and NMEA checksum Enabled.

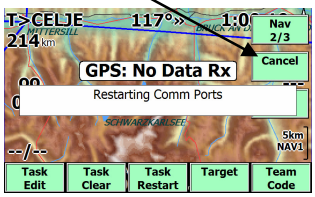
7.7.1.8 Units

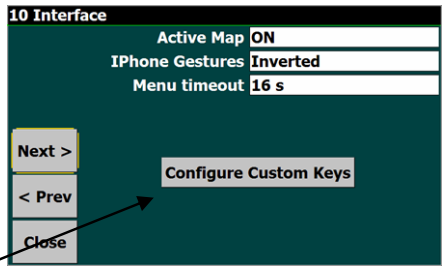
Nearly believable sets of units are selectable from this menu. UTC offset will adapt time display to your local time.



7.7.1.9 Interface

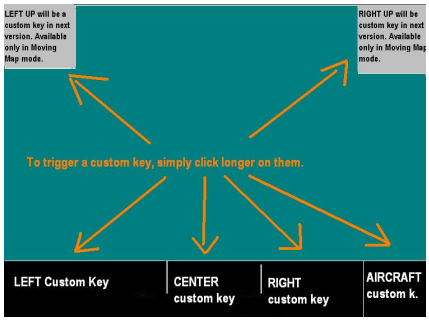
Interface important setting is **Menu timeout**. Setting defines disappearing time of **menu icons** after an activation has happened.





7.7.1.9.1 Configure Custom Keys

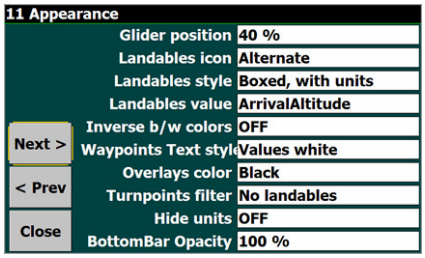
Settings under **Configure Custom Keys** makes possible to design custom keys functions of touch screen regarding to pilot individual requirements.

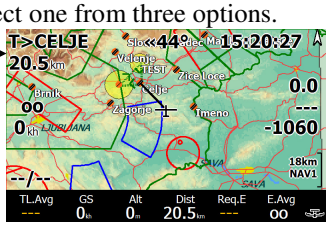


Custom keys organization structure, for details see original LK 8000 manual page 24.

7.7.1.10 Appearance

Settings connected with this menu define moving map organization.
-**Glider position,** defines position of the glider symbol, 0% central
-**Landable Icons**, defines icons of land able points.
-**Landables style**, layout of land able points.
-**Landables value**, req. efficiency or arrival altitude shown.
-**Inverse b/w colours**, colour inversion of figures of map overlay.
-**Waypoints Text style**, select one from three options.
-**Ovelays color**,

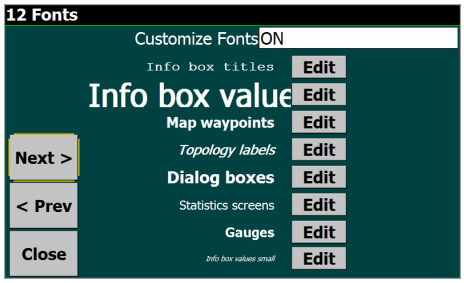


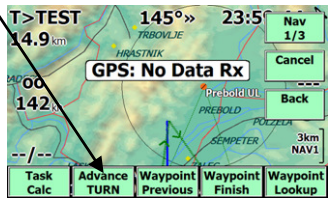


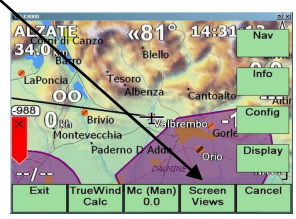
-**Turn points filter**, options NO landables, ALL Waypoints and DAT Turn points
-**Hide units**, will hide unit on all figures of overlay (moving map).
-**BottomBar Oppacity**, sets opacity of bottom bar.

7.7.1.11 Fonts

Selection of Customize Fonts ON makes possible to adjust font size of different displays.
Info box tittles, will influence info box tittles,
if **IBOX** solution will be selected in **Screen Views**
Info Box values, will influence Info Box values displays
Map waypoints, makes possible to adjust fonts of way point designators over the map
Topology labels, will adjust topology labels details
Dialog Boxes, dialog boxes are boxes which appear during booting, after press on menu button and also setup is subject of this setting.

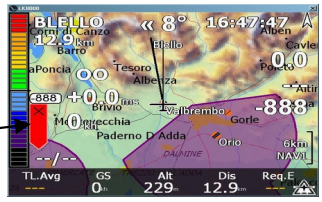




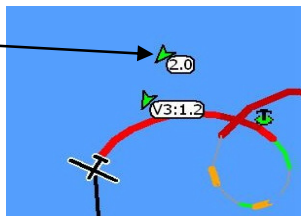


7.7.1.12 Map Overlays

Overlay means figures and letters over moving map.
-**Screen data**, select one of offered option.
-**Font size**, defines font size of overlay data.
-**Show Clock**, will show clock on overlay
-**Glide terrain line,** line or shade.
-**Glide bar indicator**
-**Variometer bar,** after enable several options are offered, additionally will also appear **vario figure**
-**Variobar mode,** defines vario bar regarding to mode of operation (thermalling or cruise)
-**Thermal bar,** display of thermal profile.
-**Track line,** setting ON and OFF
-**Flarm on Map,** offered options are: OFF, ON fixed, ON scaled suggested solution is ON scaled.
Flarm objects



Fixed scale will make Flarm objects presentation unclear by high zoom levels.

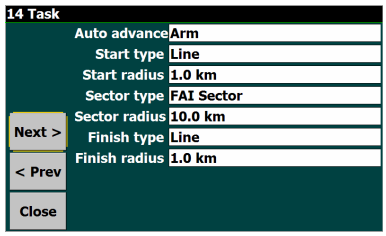


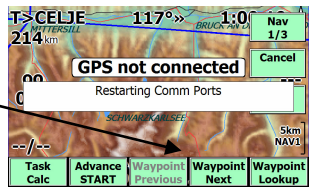
7.7.1.13 Task

Settings regarding task global settings are to be defined in this menu.

Note!
Any task could be individually prepared after using of Task edit function.

Auto advance, defines changeover procedures by start and over turn points
Manual selection requests manual change over under pilot decision after Using Next Waypoint command of NAV 1/3 menu.



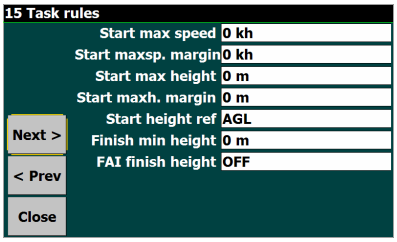


Auto selection will cause an automatic change over after reaching of TP or start.
Arm selection will prepare ready for start and will execute change over automatically after sector will be reached.

Start Type, defines start sector geometry
Start radius, defines start sector expanse
Sector Type, is connected to turn point sector geometry
Sector radius, sector expanse
Finish Type and finish radius, defines finish geometry

7.7.1.14 Task rules

Task rules may be defined to limit valid starts according to competition rules.

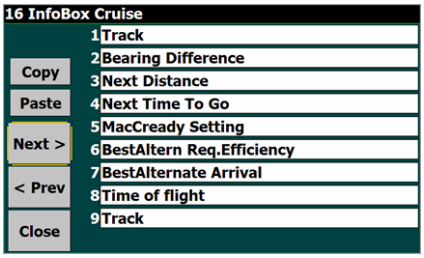


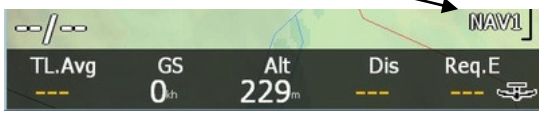
Start max speed, input of maximal allowed speed over start line.
Start max speed margin, start speed tolerance.
Start max height, maximal start height over ground by start.
Start max height margin, start height tolerance.
Start height reference, inputs MSL and AGL. MSL means above sea level.
Finish min height, minimum height above ground at finish line.

7.7.1.15 Info Box Cruise

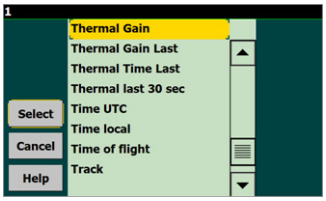
This menu makes possible to custom design **page 7** of bottom row **(CRU 7).**

Bottom row is lower section of moving map which has 9 variants. Individual variant is described with **three letters** and **numbers** from 1 to 9 and selectable by rotating of ↔ selector.



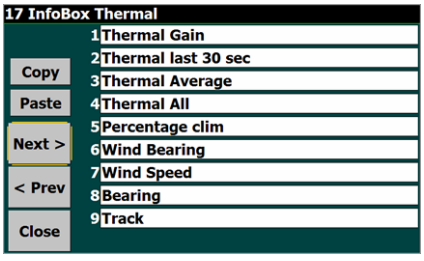


Number of available boxes depends on the display, typical value is 5.
Any position offers a bright spectrum of selections.
Settings having first two letters AA are settings regarding to **A**ssigned **A**rea task.
Use also **Help** which is available after item selection.



7.7.1.16 Info Box Thermal

This is **page 0** of bottom row which is active only during climbing period. During cruise period the last selected page will become active, after straight flight will be detected. The same enlistment as in 2.3.2.15 is offered.



7.7.1.17 Info Box Final Glide

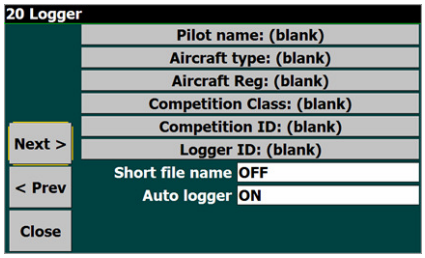
The same options as in paragraph 8.8.17.

7.7.1.18 Info Box Auxilarry

The same options as in paragraph 8.8.18.

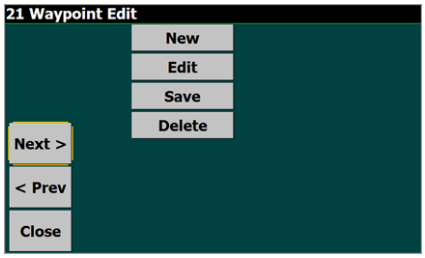
7.7.1.19 Logger

The program is capable to log flight data, all inputs connected to flight recorder are to be done in this menu. The logged data are not IGC approved.



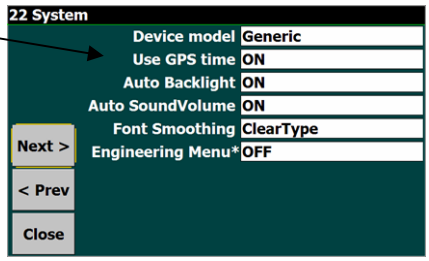
7.7.1.20 Waypoint Edit

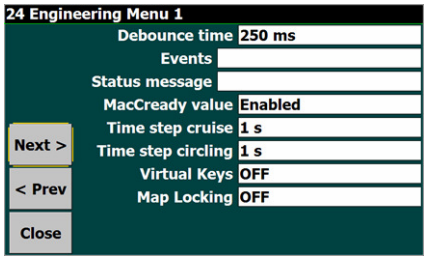
Any waypoint data of active turn point data base can be altered after using of this menu.



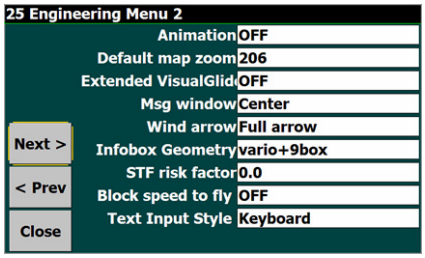
7.7.1.21 System

Suggested options for operation with LX mini Map II. Engineering Menu is used to define some further system parameters. After selection ON close menu and start new. Now a new menu numbered as **24** will become active.



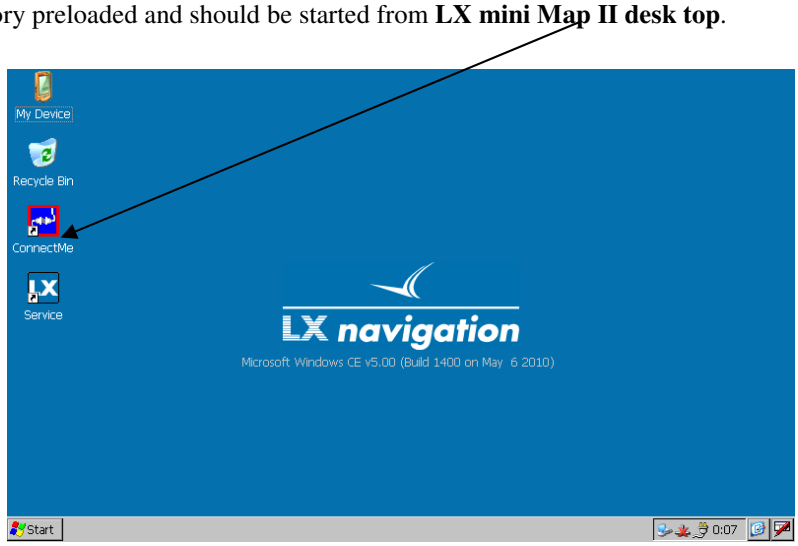


Debounce defines touch screen reaction time on press. If you intend to use virtual keys use enable option.
Engineering menu 2 is available after **Next** command.
Use Help to understand individual options.

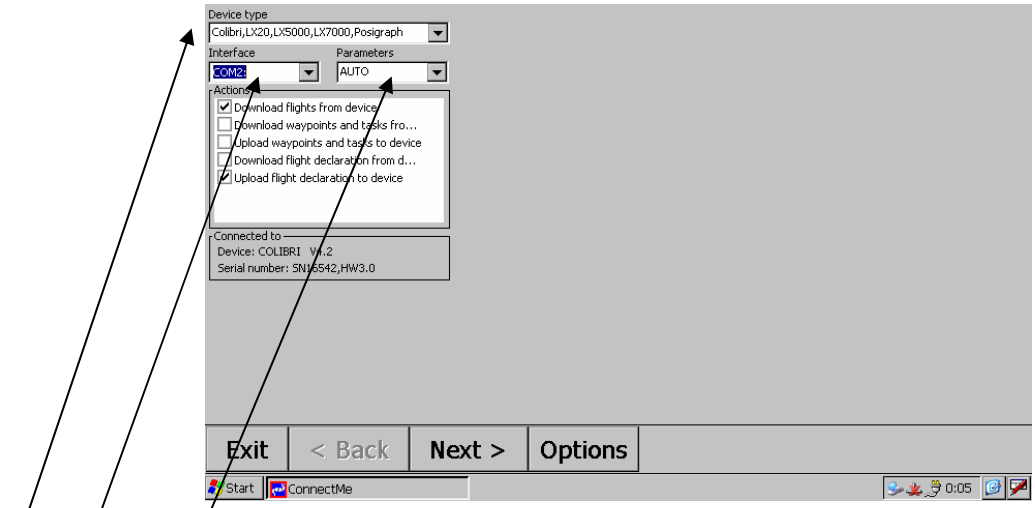


8 Using of ConnectMe

ConnectMe is free ware program which makes possible to download data stored in the flight recorder which is connected to the Mini Map. Uploading of declaration and TP data base is also possible.
The program is factory preloaded and should be started from **LX mini Map II desk top**.



Use **Exit** function of navigation program to access desk top. SeeYou Moile 4.01 makes possible to start Connect me from Menu page.
After click on ConnectMe icon the program will start.

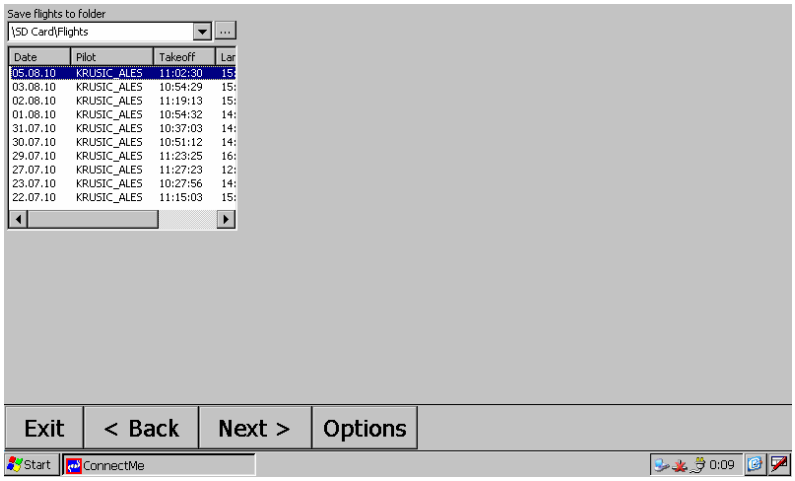


To establish communication following settings should be adapted as minimum:
-device selection
-COM 2
-Baud rate selection (this should meet flight recorder type) or auto

Note!
In some configurations is exceptionally used com 1, so select com 1 having such a configuration. Com port designation you find on the label of the wiring.

The destination to SD card is factory set, so all downloads will be stored to the SD card.

Note!
Never use destination **My Documents**, as the unit hasn't internal back up battery and the data will be lost after power off of the Mini Map.



It is recommended to use an **additionally SD** card for downloads and uploads; this will prevent unpleasant situations due to loosing of SD card with navigation program.

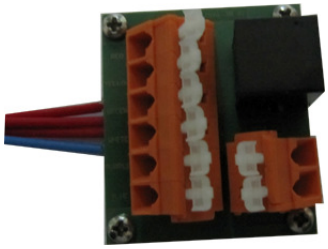
Important!
It is recommended to restart (power off) LX mini Map II after communication with ConnectMe, this will guarantee correct com port setting of the navigation program.

9 Installation

The installation of any LX mini Map II version is simple and doesn't require any soldering works, as all connections are plug_and_play.

9.1 Power supply

The power supply should be applied to the junction box and the junction box splits power to LX mini Map II and also to all devices connected to the junction box. Connect **red** wire to plus and **blue** wire to GND. A master switch is a part of wiring.



Note!
There is no **fuse built** into the LX mini Map II electronic, so it is recommended to use an external fuse, not less than 1A. A power on/off switch is a part of wiring.

Power specification:
LX mini Map II 8-28 V DC

Note!
Respect also power limitations of interfaces connected to the system.

After a short power break, the LX mini Map II computer will start new and some unsaved data will get lost. So it is recommended to use **no break** switches for change over from main to spare battery.

9.2 Mechanical installation

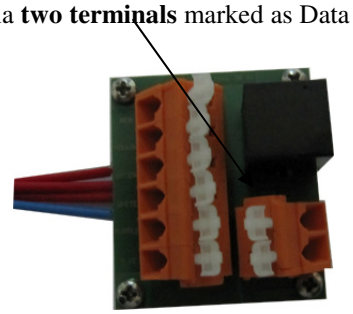
The unit basic equipment is one USB mini cable with open ends. All four wires are clearly marked as:
-12V
-GND
-NMEA in
-Tx

9.2.1 Mounting frames

Every unit can be upgraded with a simple holder which makes possible installation on instrument panel. A solution with 9 cm gooseneck is also available.

9.2.2 Connection after using of Junction box

Basic Junction box doesn't have 9P connectors and makes only possible to connect GPS to the LX mini Map II. Connection of GPS is also possible via **two terminals** marked as Data In and Data out, Data In means NMEA input for LX mini Map II.



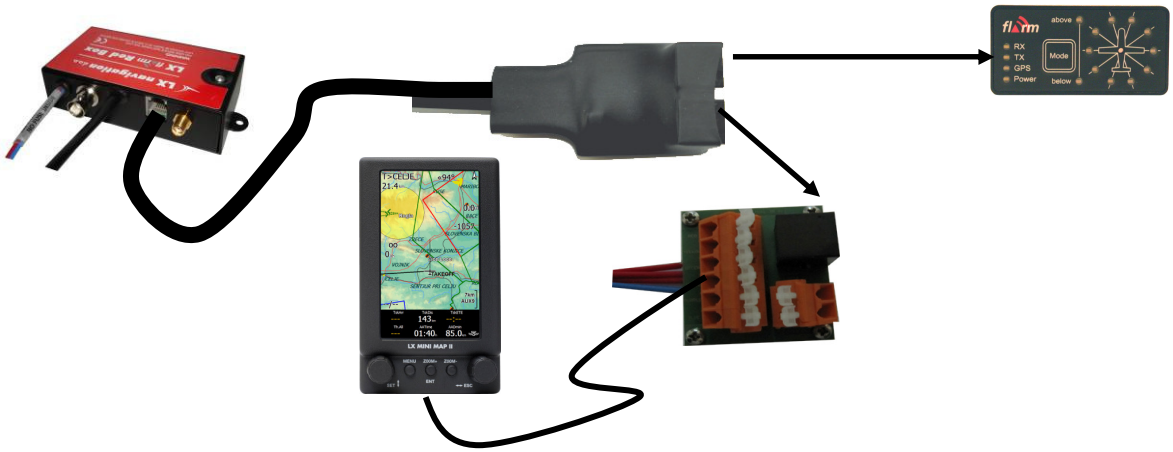
Note!
Use ground terminal for data ground, if data source and LX mini Map II don't use the same GND.

9.3 Connection of Flarm units

Connection of Flarm units is in some cases a little bit specific. In general Flarm units offer an IGC compatible connector and that means connection to Junction box should be done via 1:1 6P telephone type cable.

9.3.1 LX mini Map II and LX Flarm Red Box

As LX Flarm Red Box have only one data output connector, the connection to Mini Map should be realized after insertion of LX Flarm spliter.



Note!
All connections plug and play, all cables delivery included no power for RB out of Mini Map. RB should be separately connected to power supply.

9.3.2 LX mini Map II and LX Flarm Mini Box

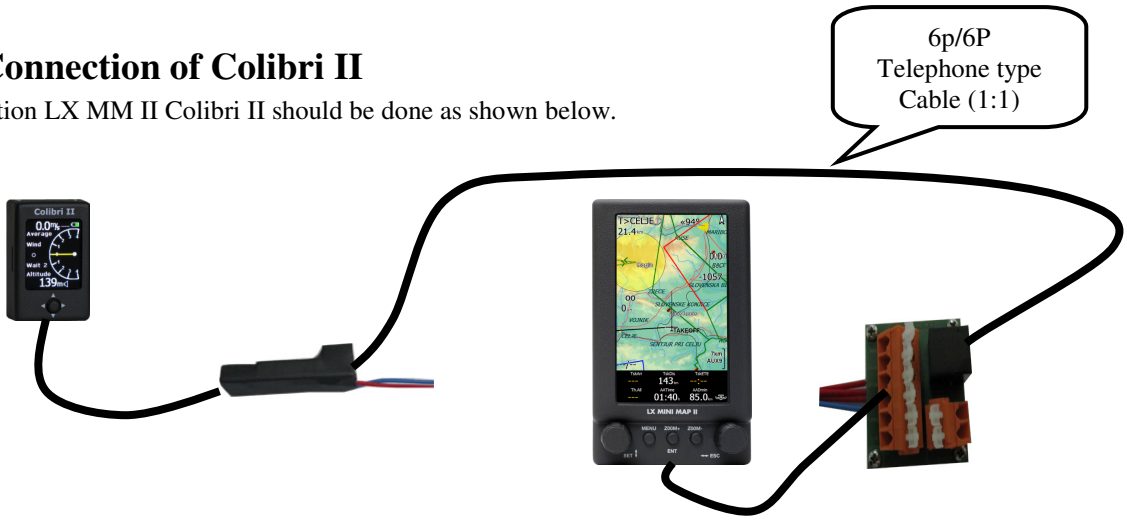
Connection LX Flarm Mini Box to Mini Map is simple plug and play after using of 6P/6P 1:1 telephone type cable delivered with LX mini Map II.

9.3.3 Original Flarm units

The connection should be done exclusively after using of Flarm 8P main connector (power data) and 1:1 6P telephone type cable. In that case Flarm will also receive power from Junction box. Having requirements for separate Flarm power, ask LX Navigation for solution.

9.3.4 Connection of Colibri II

The connection LX MM II Colibri II should be done as shown below.



9.3.5 LX 1606 and LX 166

See page 9.

10 Appendix