

# ***LX700 V1.0***

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## **GPS Navigation System**



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## 2 General

LX 700 is GPS navigation instrument using one standard cut out 80mm in the instrument panel. The unit has a high resolution 160x240 pixel display, optionally with backlight. For pilot manipulation are used four rotary switches and three push buttons.

Navigation functions:

- Jeppesen Data base for airports, nav. aids and airspace
- 600 Waypoints
- 100 Routes
- Flight statistics and log book on the ground
- Near airport function

### 2.1 Technical data

- Power 8-36 V DC
- 240x160 pixel display (backlight like option)
- 80 mm air norm cut out
- NMEA output
- 12-Kanal-GPS-receiver
- flight recorder
- PC interface
- Wiring
- Weight: 500g

### 2.2 Rotary switches and keys (buttons)

The following controls are mounted on the front face of the LX700.

- Four rotary selector switches
- Three push buttons



### **2.2.1 On/Start Button (ON/START)**

The **ON/START** button is multifunctional. If the instrument is not already powered up, a short press on the **ON/START** button will switch the instrument **ON**. To switch the instrument **OFF**, press the **ESC/OFF** button for a few seconds and the instrument will switch off. If an attempt is made to switch the instrument off during flight, the instrument requires confirmation from the pilot, **so the LX 700 cannot be switched off by mistake**. On powering the unit, the first screen shows the firmware version, database version, serial number of the unit, and total memory in hours available.

### **2.2.2 MODE selector (rotary switch)**

The mode selector is used to change modes of operation. This switch has the **highest priority** in the system. Whenever it is operated, **a mode change will occur**.

### **2.2.3 UP/DOWN selector (rotary switch)**

This rotary switch has a lower priority than the mode selector switch and is active all the time in the selected mode. It is mainly used for selecting sub menus during navigation and to scroll in the edit menu.

### **2.2.4 ENTER button**

The main function of this key is **confirmation**, and **to start edit procedures**.

### **2.2.5 ESC/OFF button**

This is a multifunctional key, which has two main functions. If it is pressed and held for a few seconds, then the instrument will turn OFF as outlined in para 2.2.1 above.

If a short press is made, then the button has the following functions:

- The display will jump to the menu of the next higher level (in edit only)
- During alpha-numeric input with the cursor active (blinking), **ESC confirms the whole line** (It is not necessary to press ENTER few times)
- Some special functions can be activated using ESC as described in subsequent paragraphs

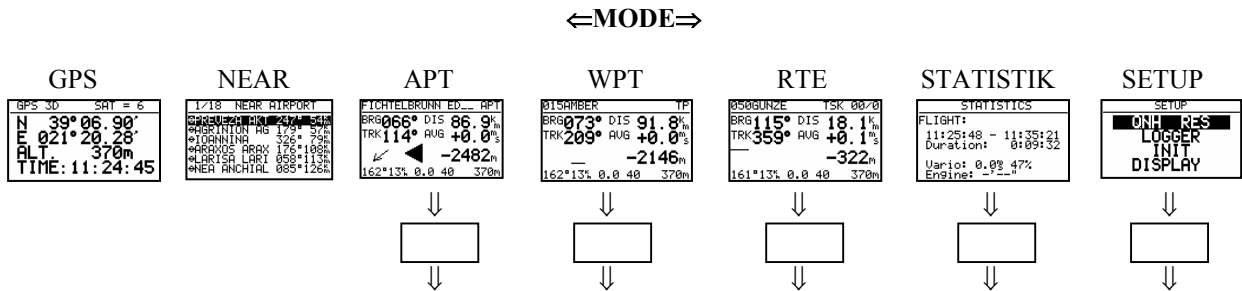
### **2.2.6 ZOOM (rotary switch)**

This is a multifunctional rotary switch too. While its main function is to change the **zoom level in the graphic mode**, it can also be used as follows:

- To select waypoints when in the main WPT page
- If an error is made during editing, it is possible to move the cursor back by rotating this knob. This can only be done if 'editing' is active which is shown by the cursor blinking

# 3 Operating modes

The LX 700 has 7 modes or main menus. All of them are selectable **directly by rotating the MODE switch**. The diagram shows the menu (mode) structure of LX 700.



Navigation menus (NAV, WPT and RTE) have sub menus, which can be selected using the **Up/Down** switch.

- GPS**            GPS status, no inputs possible
- NEAR**        Near airport, select one airport of interest, no further inputs are possible
- APT**          Navigation and selection of airports
- WPT**         Navigation, selection and editing of waypoints
- RTE**         Navigation, selection and editing of routes
- STAT**        Flight statistics and logbook
- SETUP**      has two levels. The first level, for which no password is required, is fully accessible. To activate the second level, it is necessary to input a password. The password is not top secret; it is the same for all instruments and is freely available.

**96990**

## 3.1 SETUP

### 3.1.1 SETUP of Options not Requiring the Password

The first five options are selected with the UP/DOWN switch and can be entered at any time; they contain no system settings



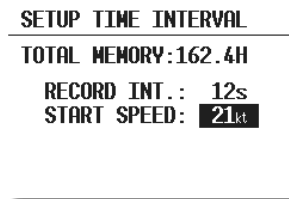
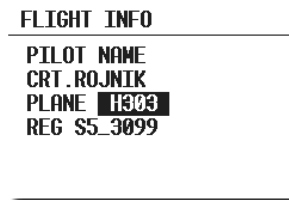
### 3.1.1.1 LOGGER

The built in flight recorder meets IGC recommendation 100%, but without any approval. A bright spectrum of flight analyses PC programs can be used for flight evaluation (LXe, SeeYou, Streopla, Opti...).

After enter on LOGGER following screen will appear.



**FLIGHT INFO** All important data, such as the pilot's name, aircraft type and registration number can be entered. The data is entered with the **ENTER**, **UP/DOWN** and **ESC** routine. This data is subsequently written into the 'H' record of the IGC flight log. Alternatively, this data can be entered with a PC and the LXe-program; or via a Colibri or LX20 (see Chapter 4).



Recording intervals are redefined after input of a new number into RECORD INT item. Shorter intervals will reduce capacity of the memory.

**TOTAL MEMORY** is the **capacity of memory** in hours that can be stored and only depends on the settings. It does not decrease as flights are stored and will only change after new settings have been made in the setup. **If the memory is full, the oldest flights will be overwritten without warning.** The total memory simply indicates how many hours of flight can be made without losing any flight data before overwriting occurs.

**Note!**

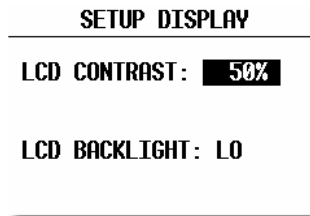
Exceeding of START SPPED will start the flight recorder. To low settings will produce fictive flights during taxi procedure. Set this parameter about 20% lower than stalling speed.

**EVENT** This option programs what happens on pressing the event button combination (START/ESC at the same time). On pressing the buttons, the flight recorder places a special marker, called a PEV (Pilot Event), in the IGC flight record. At the same time, it causes the recorder to run at a different fix interval for a certain time. The interval and time are set up in this option.



### 3.1.1.2 DISPLAY

This option sets the contrast of the LC display. The actual contrast can vary with viewing angle, ambient light level and **temperature**. The contrast is changed by rotating the **UP/DOWN** selector



The display backlight is an **option** and its intensity can be varied in three steps.

### 3.1.1.3 TRANSFER

This option initiates the transfer of data between the instrument and a connected PC, LX 20 or Colibri. Data transfer is started by pressing **ENTER** with **TRANSFER** selected. See Chapter 4 for further details.

### 3.1.1.4 PASSWORD

Certain system parameters can only be entered through this option. Full details are in the following paragraph, 3.1.2.

**The Password is 96990**

## 3.1.2 SETUP of Options Requiring Access by Password

After entering the password, **96990**, a further 10 system settings are available. During flight the password is not required, which means that when **ENTER** is selected in the Password option during flight, **the LX 700 goes immediately into the following setup menu!**



### 3.1.2.1 MAGNETIC VARIATION

Some GPS receivers don't deliver magnetic variation of the local area, having such a situation the pilot have to input local value of variation by hand using this menu, if he wants to use magnetic directions by navigation. GPS delivers always trough values.

### 3.1.2.2 WPT (Waypoints)

All settings concerning waypoints can be done in this menu. The LX 700 is able to store 600 points in a proprietary format (\*.DA4)

#### WP-QUICK POINT-NAME

The pilot is able to store his **actual position** during the flight by pressing the **START** button in WPT or NAV mode in the **first navigation page** (see Para 3.2.4.7). These waypoints are called QUICK WP and are given the default name **AP** (actual point).

#### Settings:

**DATE: OFF** stores the position as **AP: 12:35**. The numbers are the time that the WPT was stored.

**DATE: ON** stores the position with the date and time (**28121330 for 28 dec. 13:30**).

#### WPT-QUICK POINT – AUTO

When **SELECT: OFF** is selected, the actual position will not be selected for navigation

When **SELECT: ON** is selected, the actual position will be selected automatically and displayed in the navigation page.

#### NEAR RADIUS

The setting has nothing to do with the setting described in **LOGGER**. The L X 700 has a very useful feature named "Simple route" which is active when a regular route is not set. When the instrument detects that it is within the **Near Radius**, then that waypoint can be treated like a confirmed WPT of a simple route. This gives the ability to provide in-flight statistics for subsequent evaluation without setting a full route. For more information on this feature see Chapter 3.4, flying with the L X 700.

#### WP-SORT

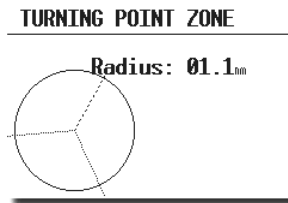
The LX 700 is able to sort the waypoints **either alphabetically** or **by actual distance** from the present position. If sorted under distance **the nearest WPT** will be the first to be displayed when selecting the waypoints.

### 3.1.2.3 OBS. ZONE (Observation Zone)



#### START ZONE

The pilot is able to define start cylinder, changing Radius. Position inside the cylinder will change over to 1. waypoint of the route automatically (see following chapters for more information).



**POINT ZONE**

The same input and function like start zone.

**FINISH ZONE**

The RTE will stop automatically after the aircraft will enter finish zone cylinder.

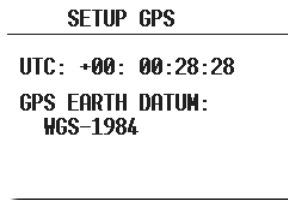
**TEMPLATES**

Will set all radius of cylinders to 2 km.



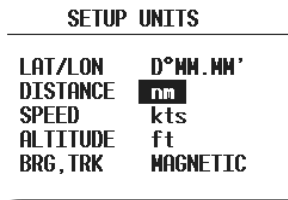
**3.1.2.4 GPS**

**UTC:** A UTC offset can be entered at this option, thus ensuring that all time references are to local time rather than UTC. However, it should be remembered that any offset will have no effect on the time recorded in the IGC flight log; this will always be UTC



**3.1.2.5 UNITS**

All known units and combinations thereof can be programmed in the LX 700. The various units that can be selected are outlined below:



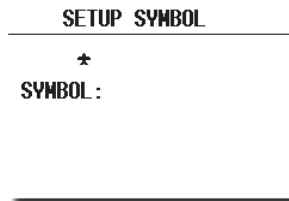
- LAT/ LON: degrees and decimal minutes; or degrees, minutes and seconds
- DIST: kilometers (km); nautical miles (NM); or statute miles (ml)
- SP (Speed) kilometers per hour (km/h); knots (kts); or statute miles per hour (mph)
- ALTITUDE: meters (m); or feet (ft)
- BRG, TRK: TRK magnetic or trough

### 3.1.2.6 GRAPHIC

The graphic display of the LX 700 can show a lot of information and if it is all selected, the display can become very cluttered. This particularly applies to airspace information and the user should ensure that only relevant airspace is selected. It should also be remembered that a cluttered display also increases the load on the graphical processor and slows down the rate at which the screen is redrawn

#### SYMBOL

The LX 700 graphic display supports two sizes of aircraft symbol; large and small. Rotate the **UP/DOWN** selector to select the corresponding aircraft symbol.

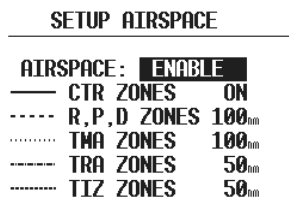


#### AIRSPACE

This setting allows the pilot to define which airspace types will be **shown on the display**. Each airspace type can be set to **ON**, **OFF** or a **ZOOM range** beyond which the particular airspace will not be displayed. Selecting **ON** will always show the airspace regardless of the **ZOOM** setting, and **OFF** will never show the airspace. If all airspace is set to **ON**, then at large **ZOOM** ranges, the screen becomes very cluttered and the graphics processor will become overloaded and slow down. To prevent this happening, the **ZOOM** range option allows a range to be set, beyond which the airspace will not be displayed.

#### Note!!:

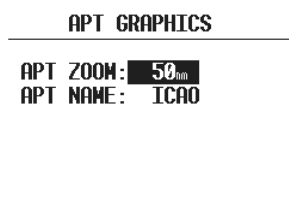
If, for instance, 100 km is selected, then the airspace will only be shown when the **ZOOM** range is 100 km or lower. When the **ZOOM** range is greater than 100 km, the particular airspace **will not be shown**.



- CTR. Control zone
- R,P,D Restricted, prohibited, dangerous
- TRA Training zone
- TIZ Traffic information zones
- TMA Terminal zone

#### APT GRAPHICS (Airports)

Airports and nav. aids are displayed with symbols together with their name which can be configured in variety of ways.



**APT ZOOM:** The airport zoom setting defines the **ZOOM** range under which the airports will be displayed. For instance, a 50 km setting will only show the airports when the selected **ZOOM** range is 50 km or lower; at greater **ZOOM** ranges, the airports will not be shown. The permitted settings are: ON, OFF, 5, 10, 20, 50 and 100 km.

**APT NAME:** The airports are displayed by an airport symbol with the adjacent name or designator as selected below:

- **ICAO** will show ICAO code of the airport adjacent to the symbol
- **2 char, 3 char, 4 char, 8 char** will display the first 2, 3, 4 or 8 characters respectively of the airport name.
- **NONE**, displays only the symbol with no code or name

#### WAYPOINT

The same logic is used for displaying way points except that some further choices are available.

TP GRAPHICS		
TP GRAPHICS	zoom	name
<b>ENABLE</b>		
T.POINT	50 <sub>nm</sub>	NONE
AIRPORT	50 <sub>nm</sub>	NONE
OUTLAND	50 <sub>nm</sub>	NONE
MARKER	50 <sub>nm</sub>	NONE

WP GRAPHICS		
WP GRAPHICS	zoom	name
<b>ENABLE</b>		
W.POINT	50 <sub>nm</sub>	NONE

#### 3.1.2.7 NMEA

The LX 700 is capable of outputting positional data sentences in the NMEA format for use by other devices. The various configurations are shown below and by placing the cursor on any one and pressing **ENTER**, the individual NMEA sentences will be displayed. If Winpilot is used, then **WINPILOT** should be selected in this option.

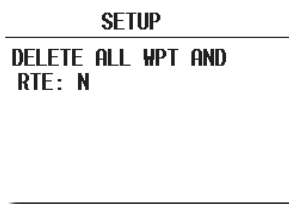
SETUP NMEA			
TRANSMIT SENTENCE :			
GP GGA	N	GPWPL	N
GPRMC	<b>N</b>	GPLX1	N
GPRMB	N	GPBWC	N
GPGLL	N	LXWP_	N
GPR00	N		

#### 3.1.2.8 PC

The baud rate (speed) of data transfer between the LX 700 and other devices (PC, LX 20 or Colibri) is selected from this menu. The default is 19200bps. It is very important that both devices are set to the **same communication speed**.

### 3.1.2.9 DEL WP/RTE

This option allows all programmed waypoints and routes to be globally deleted. If **Y** (Yes) is selected, then all waypoints and routes will be deleted and cannot be retrieved. **Be careful with this option.**



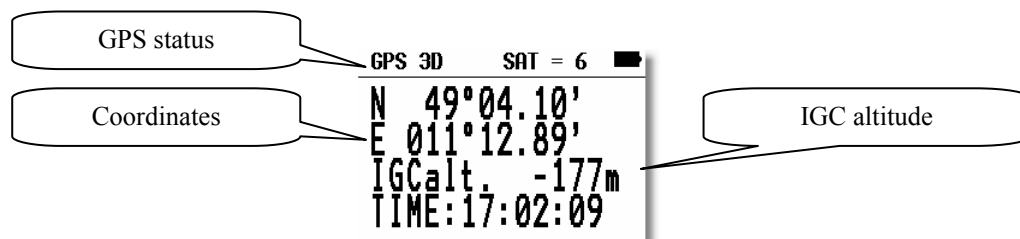
## 3.2 Navigation Functions

The LX 700 has the following navigation functions displayed on six main pages. The pages are selected in sequence by rotating the **MODE** selector:

- **GPS** - Status and Coordinates
- **NEAR AIRPORT**
- **APT**, - Airport
- **WPT** - Waypoints
- **RTE** - Routes
- **STATISTICS** - These can be accessed both during flight and after flight using the LOGBOOK function

### 3.2.1 GPS Status mode

This page is purely informative; no configuration is possible.



By rotating the **UP/DOWN** selector the displayed altitude will appear in both m and ft at the same time.

The **TIME** display can be changed to a Stop watch as follows:

- Press **START** status **STOP**: 0:00
- Press **START** status **RUN**: 0:12
- Press **START** status **STOP**: 0:50
- Press **START** status **STOP**: 0:00 Reset
- Press **ENTER** and **TIME**: 11:56:32 is re-activated
- 

### 3.2.2 NEAR AIRPORT

This option displays the nearest airports and nav aids, both from the NAV database. Additionally, waypoints having an attribute **INCL EMR**. will appear on near list. Airports, nav.aids and waypoints are separated using different symbols in front of the name (= airport, \* nav .aid, T waypoint).

Place the cursor with the **UP/DOWN** selector on the desired airport, nav aid or waypoint and press **ENTER**, to **select**. The L X 700 will change to NAV/WPT mode and all navigational features will be available.

		3/16	NEAR AIRPORT	
Waypoint (Incl.Emr.)	⊕	AP 23:07	108°	1 <sub>km</sub>
	⊕	BR 03:05	250°	1 <sub>km</sub>
	⊕	LUCHOW REHBEC	200°	17 <sub>km</sub>
	⊕	NEUSTADT-GLEW	049°	34 <sub>km</sub>
	⊕	SALZWEDEL	171°	38 <sub>km</sub>
Airport from Database	⊕	KLEIN GARTZ	171°	38 <sub>km</sub>

**Note!**

The symbol preceding the name indicates which database the landing point has come from. See the examples above.

### 3.2.3 NAV (Airports, VORs and NDBs)

The three main navigation modes (NAV, WPT, RTE) are selected by rotating the **MODE** selector. All three options are similar and have similar basic navigation data screens accessed by turning the **UP/DOWN** selector. The first page shows the basic navigation data (bearing, distance, ground track and ground speed). The airport memory of L X 700 has a capacity for approximately 5000 airports. The airport data cannot be edited in the instrument; all necessary updates should be done using a PC. The database used in LX 700 is a Filser-licensed Jeppesen database. The database is not free, which means an update is only possible by obtaining an update code. The code is available from Filser Electronic and depends on the database version and serial number of the LX 700. The database can be downloaded from the Internet using the following addresses:

[www.filser.de](http://www.filser.de)

[www.lxnavigation.si](http://www.lxnavigation.si)

#### 3.2.3.1 Navigation in NAV, WPT or RTE

There are five navigation pages; the first one is described below.

##### 1. Navigation page

CELJE	LJCL	NAV
BRG 291°	DIS 24.5 <sub>nm</sub>	
TRK 360°	GS 74 <sub>kt</sub>	
DTK 293°		
0.7 <sub>nm</sub> [ . . . .   . † . . . . ]		

- BRG** Bearing
- DIS** Distance
- TRK** Track
- GS** Ground Speed
- DTK** Desired Track, to preset use rotary switch positioned on the upper left corner of the unit

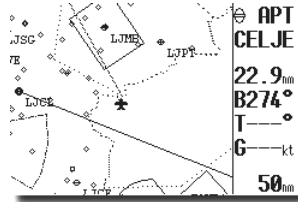
**Note!**

After **first selection** is BRG=DTK, having changed DTK during the flight and after navigate in another navigation mode will keep DTK unchanged, after return. Use GO DIRECT to set BRG=DTK

The lower part of the display show a CDI indicator including an off track indicator.

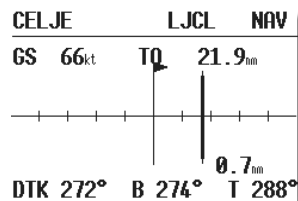
## 2. Navigation page (Graphic)

Rotating the **UP/DOWN** selector will bring up the graphic page. The airports and waypoints will be shown with both symbols and short names or ICAO-code.



The aircraft symbol remains in the centre of the screen and the map moves under it. To change the displayed range, simply rotate the **ZOOM** knob anti-clockwise to increase the range or clockwise to decrease it. The display is always oriented like north up.

## 3. Navigation page



The Navigation page nr. 3 show the same data as page nr. 1. Only the difference is composition of the display data, the central part is now CDI indicator.

TO will be indicated, if the distance to the destination is decreasing and FROM will indicate increasing distance (not VOR identical). Having difference BRG and TRK more than 90°, means FROM.

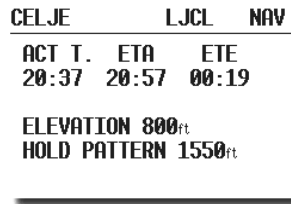
Arrow will help the pilot to steer to the desired track.

Rotating DTK rotary switch (left up) will move CDI needle that means using of DTK is possible to intercept believable desired track.

Using of **GO DIRECT** function, available in APT, WPT and RTE will make BRG=TRK and will allow to proceed from actual position to the destination directly. To activate GO DIRECT press enter in any navigation mode.

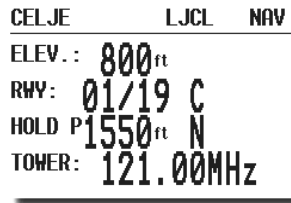


4. Navigation page



ACT T. Local time  
 ETA Estimated time arrival  
 ETE Estimated time elapsed  
 ELEVATION Elevation  
 HOLD PATTERN Hold pattern altitude

5. Navigation page



RWY Runway (C: Concrete, G: Grass)  
 HOLD P. Hold pattern/direction (N,E,S,W), (I) not defined

**Note!**  
 Navigation pages of all three nav. modes are more or less the same

3.2.3.1.1 SELECT - Airport,VOR,NDB Selection

After placing the cursor on the function required and pressing **ENTER**, a menu appears which offers airport selection.

There are two ways to select an airport. If the ICAO locator is known, it can be directly entered when the name of the airport will be displayed



**Note!**  
 GO DIRECT and RESTART functions are active only during the flight. Restart will restart so called Simple Route. See chapter Flying LX 700 for details.



```

NAV SELECT
-----
ICAO: LJ**

```

If an incorrect letter is entered, then either press **START** or rotate the **ZOOM** selector to move the cursor back so that the letter can be re-entered:

```

NAV SELECT
-----
ICAO: EDDM

```

```

NAV SELECT
-----
ICAO: OJ**
      GERMANY

```

If the ICAO locator is unknown, then the following method should be used. With the cursor on **ICAO**, press **ESC** to move the cursor to the country. Select the required country with the **UP/DOWN** selector and press **ENTER**. Four stars will now be displayed at the airport name. Using the **UP/DOWN** selector and **ENTER**, input the first four letters of the airport name. All airports with the same first four letters will be available and can be cycled through by use of the **UP/DOWN**.

```

APT SELECT
-----
ICAO: EDBM
      GERMANY
APT: M****

```

```

NAV SELECT
-----
ICAO: OJ**
      GERMANY
APT: M****

```

If you input less than four characters, the number of airports that fit the first x letters will be greater. If all four stars are confirmed with **ENTER** or after pressing **ESC**, all airports of the selected state are available and can be cycled through in alphabetical order.

**Note!**

To select VORs and NDBs replace APT with VOR or NDB before name input.

### 3.2.4 WPT (Waypoints)

The LX 700 has the memory capacity to store up to 600 waypoints. The waypoint name can have a maximum of 8 characters (letters or numbers, no lower case letters and no special signs except \* and ). The menu structure is the

same as in the APT menu - either four or five pages depending on the set up parameters. A waypoint can be added to the database in one of four ways:

- Manual input
- Copy from NAV database
- Data transfer from a PC, LX20 or Colibri (\*.DA4 format)
- Input of actual present position

The procedure is similar to the method of selecting an APT.

### 3.2.4.1 WPT Selection

To select a waypoint simply replace the stars with the first letters of the WPT.

#### Note!

The LX 700 is able to sort the waypoints alphabetically or by distance from present position. The method used is defined in the setup menu. The default setting is alphabetic. If sorting by distance is selected, then the **nearest WPT** will appear after selection (**all stars confirmed with ESC**). To search for the WPT use **UP/DOWN** selector and confirm with ENTER.

It is also possible to select WPT by **using ZOOM** selector. This works exclusively from **the first page**. To change the WPT simply rotate the **ZOOM** selector.

### 3.2.4.2 WPT EDIT

This option allows the pilot to change WPT data at any time. The waypoints used in LX 700 can have two attributes. The two different types of waypoints are as follows:

- **WAYPOINT** INCL.EMR (will be offered in Near Airport list)
- **WAYPOINT** EXCL.EMR ( will **not be offered** in Near Airport list)

```

WPT EDIT
AREH  EXCL.EMR
LAT.: N 46°29.72'
LON.: E 015°30.55'
ELEV.: 4069ft

```

Following WPT data can be edit by pilot:

- Name
- Coordinates
- Elevation

### 3.2.4.3 WPT NEW

There are two ways to get a new waypoint. Copy APT data will allow to copy APT, VOR or NDB data from NAV data base into WPT data base.

Second way is to input WPT data by hand.

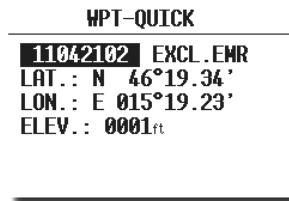
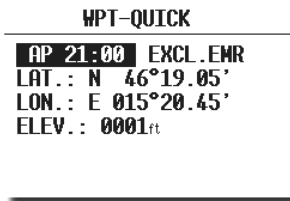


3.2.4.4 WPT delete

If this option is selected, then delete confirmation will be requested. If the reply is 'Y', then the waypoint will be deleted and cannot be recovered.

3.2.4.5 WP QUICK (Storing of actual position).

The procedure is activated by pressing the START button while in the WPT-main page only !



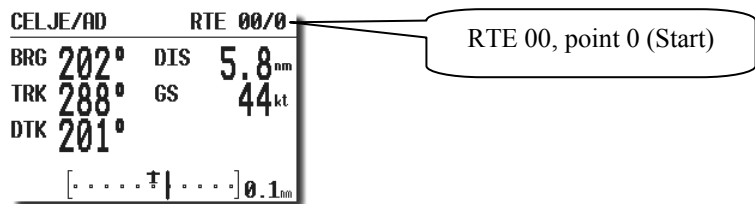
On activating the procedure, the present position is displayed with the name defined in one of two forms; AP (actual position), or TIME (date and time), depending on which option has been selected in the setup (through password) menu. Once selected, the data can be edited if required.

3.2.5 RTE (Route)

The LX 700 can store up to 100 routes (00-99), with route containing a maximum of 10 waypoints (start , 8 waypoints and finish). Selecting and storing a route confers the following benefits:

- Accurate route statistics
- Simpler navigation
- Automatic change over to next WPT after reaching of WPT
- RTE shown on the graphic display
- One further step of ZOOM (full route)

The menu structure is similar to the APT and WPT.



After change over is DTK=BRG, DTK adjustment on leg is any time possible. GO DIRECT function is active too.

### 3.2.5.1 RTE select

All stored routes can be viewed by choosing **SELECT** and pressing **ENTER**. All pre-programmed routes can now viewed by rotating the **UP/DOWN** selector; once the required route is displayed, it is selected with **ENTER**.

RTE SELECT	
RTE SELECT: 01	
0	CELJE/AD 5 NOT PROG
1	SG/AD 6 NOT PROG
2	PTUJ/AD 7 NOT PROG
3	CELJE/AD 8 NOT PROG
4	NOT PROG 9 NOT PROG

### 3.2.5.2 RTE Edit

The active RTE can be edited at any time, both on the ground and during flight. An already **overflowed** waypoint cannot be edited.

RTE EDIT	
TSK 01 invert: N	
0	CELJE/AD 5 NOT PROG
1	SG/AD 6 NOT PROG
2	PTUJ/AD 7 NOT PROG
3	CELJE/AD 8 NOT PROG
4	NOT PROG 9 NOT PROG

After **INVERT Y** a new inverted route will be ready for navigation. Each waypoint can be edit separately after selection with up/down and enter.

:

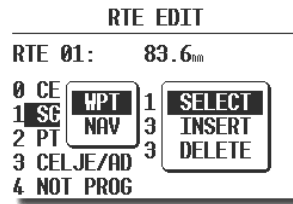
RTE EDIT	
RTE 01:	83.6 <sub>nm</sub>
0	CELJE/AD
1	SG/AD 14.3 <sub>nm</sub> 342°
2	PTUJ/AD 35.9 <sub>nm</sub> 094°
3	CELJE/AD 33.5 <sub>nm</sub> 250°
4	NOT PROG

RTE EDIT	
RTE 01:	83.6 <sub>nm</sub>
0	CELJE/AD
1	SG/AD 1
2	PTUJ/AD 3
3	CELJE/AD 3
4	NOT PROG

SELECT
INSERT
DELETE

- **SELECT** replaces the selected waypoint with another
- **INSERT** adds a waypoint above the one selected
- **DELETE** removes that waypoint from the route

**Select** will replace the waypoint with a new one from WPT or from NAV data base (APT, VOR or NDB).



### 3.2.5.3 RTE new

Pressing **ENTER** with the cursor on **NEW** will select a sub menu asking whether an existing route should be copied. If **N** is selected, then the next available route with all points un-programmed will be selected. Sometimes it is easier to copy an existing route and then amend it; pressing **'Y'** allows this to be done. To provide copy is possible only on an **empty route** (all points not programmed).

### 3.2.5.4 Delete

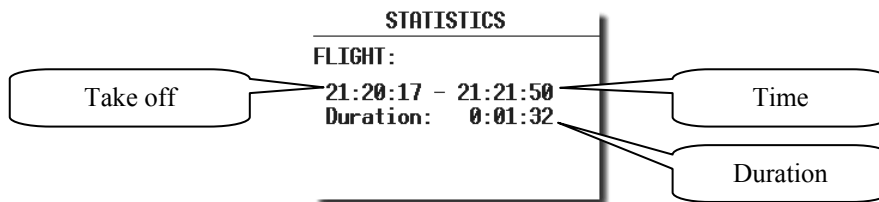
Delete will delete RTE definitively.

### 3.2.6 Statistics

The statistic during flight will inform about flight time and if route will be flown additionally useable statistics data will be available. After flight a log book with take off, landing time and duration will be offered.

#### 3.2.6.1 Statistics during flight

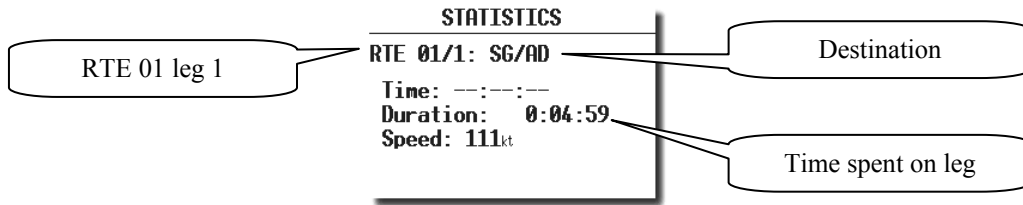
The basic statistics page shows following data (always present).



#### 3.2.6.2 RTE Statistics

If a route is selected (WPT mode) and the aircraft is inside cylinder defined in **SETUP**, an automatic change over to next WPT will follow.

**Note!**  
To change over **out of cylinder** use manual change over method, press **START** button for a short time



Time presence describes an already flown leg.

STATISTICS	
RTE 01/1:	SG/AD
Time:	21:37:22
Duration:	0:11:01
Speed:	77kt

If no RTE has been selected, but simple flown from WPT to WPT or NAV, practically the same statistics data will be available. Take off position will be taken like RTE start and rounded WPTs will be included into so called simple RTE. It is only important to be close enough and that the WPT or NAV points were selected at that time. After restart command actual position will be taken like start of simple RTE. **S** after RTE Statistics will inform about presence of simple RTE. After a regular RTE will be started, simple RTE will be reset automatically.

STATISTICS	
RTE S/1:	AREH
Time:	--:--:--
Duration:	0:00:32
Speed:	10kt

### 3.2.6.3 LOG BOOK

These statistics are available **after flight**. The logbook shows the flights by date with take off and landing time. The logbook entry will appear after landing and is the signal that the flight is finished.

LOGBOOK		
04.11.03	21:20	21:42
04.11.03	21:00	21:17
04.11.03	20:37	20:53
04.11.03	20:33	20:34
04.11.03	20:23	20:29

Enter will show duration for a short time.

## 3.3 Flying with the LX 700

To get the best out of the LX7000 PRO IGC, it is important that some preparation is done prior to the flight - trying to configure the instrument or set up a route. Pre-flight preparation will ensure that the flight will be both successful and enjoyable.

### 3.3.1 Preflight check

It is strongly recommended to check all settings in the setup mode accessible without the password in case they have been changed by a previous pilot. It is recommended that a route is set up prior to take-off. It can either be imported from a PC, LX20 or Colibri set up at home or during briefing, or entered directly into the instrument.

### 3.3.2 Performing the flight

It is recommended to switch the LX 700 on some minutes before the estimated take off time to ensure that the GPS is locked on.

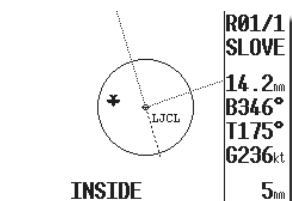
If a route (RTE) is to be flown, please ensure that:

- The correct route is selected. It should be checked (by using the EDIT) that the correct WPTs are selected and are in the correct sequence.
- Point '0' is always the start point (not the take off point).

#### 3.3.2.1 Starting a route

RTE will start automatically, if the aircraft is flying and its position is inside the start cylinder. The very significant signal is navigation data to waypoint 01. To start RTE outside cylinder press START for a short time.

An INSDIDE message will be present, by using of graphic display.



Already started RTE is possible any time reset using of RESTART command..



#### Note!

**INS. NEAR** will insert a new WPT into RTE like actual navigation point from NEAR list. After selection this new point of RTE will be immediately ready for navigation.

### 3.3.2.2 Automatic swap on reaching a WPT

After reaching inside zone, the unit will change over to next WPT automatically. A WPT which will not be overflow could be over jumped (longer press on START) or deleted.

### 3.3.2.3 RTE END

On entering the finish zone the RTE stops automatically and a message RTE END will appear. If you want to fly a new route without landing, then it is necessary to use RESTART and SELECT.

### 3.3.2.4 SIMPLE ROUTE

The simple route feature is active prior to **a regular route being started**. The feature is very useful for pilots who do not fly routes but fly from WPT to WPT (or NAV). Simple route permits statistics to be stored like a real route and which can be displayed on the Statistics page and also evaluated by a PC after flight.

Immediately after take off, the current position will be considered to be a **start point**. On reaching a WPT or NAV point which has been selected in WPT or NAV pages, the point will be treated as a WPT in a simple route and so on. The radius to define confirmation of arrival at the WPT is set by pilot in „**NEAR WPT**“ (SETUP/PASW/WPT). The simple route grows as more and more WPTs and APTs are reached. The flight statistics are the same as a real route except that RTE S shows that no regular route is being flown.

STATISTICS	
TSK S/1: THALMAES	
Time:	0:52:19
Duration:	0:08:11
Speed:	126 <sup>km</sup> / <sub>h</sub>
Vario:	--- <sup>ft</sup> / <sub>s</sub> 0%
Engine:	- ' - -"



## 4 PC and Flight Recorder Communication

The LX 700 is able to communicate with a:

- PC, using LXe, SeeYou, Strepla or CAL programs.
- LX 20
- Colibri
- Posigraph

The following data can be transferred bi-directional between a LX20, Colibri or Posigraph

- WPT and TSK data (DA4)
- Flight information

Using the LX700 in conjunction with a LX20 or Colibri, it is possible to prepare a flight at home or during the competition briefing, and then when at the airfield use the LX20 or Colibri as a data source for LX 700. Similarly, a route can be programmed in a PC and then transferred to a LX20 or Colibri for subsequent loading into the LX700.

### 4.1 Communication with PC

Communication with a PC is via the RS232 serial COM port. If your computer only has an USB port and no COM port, then you will need to obtain an USB to serial adaptor. To couple the unit to the COM port, a special cable is supplied with the LX 700 which terminates in a SUB D 9 pin socket

A CD with the following programs is supplied with LX 700:

- LXe Windows program for communication, basic flight evaluation and database management.
- LxasBrowser for airspace management and its manual.

Using the LXe program, the following procedures can be carried out:

- Read logger
- Read \*.da4 (WPT and TSK files)
- Read flight info
- Write \*.da4 (WPT and TSK files)
- Write flight info \*.hdr
- Write APT (to load APT and nav.aids check item "Include nav. aids in APT" in LXe SetuP/Optipns/advanced)
- Write airspace

LXe can should be used to update the NAV and airspace database. Such updates are not usually free and an update code has to be purchased from **Filsler Electronic**. The update code for the database which is delivered with the instrument is written on the CD.

The CONNECT status is achieved as follows:

- **On the LX 700 go to SETUP – TRANSFER**
- **On the PC start program LXe**
- **On the LX 700 press ENTER and wait some seconds until CONNECT appears**

CONNECT indicates that both LX 700 and PC have established connection and data transfer can be started. If problems are experienced, check the following:

- Close all other applications that may be using the PC com port (Active Sync is a well known culprit.)
- Check cable and connector
- Disconnect all other units that may be connected to another COM port (LX 20, Colibri, PDA)
- Check the com speed on both units which should be the same

## 4.2 Communication between LX 700 and LX 20 and Colibri

The LX 700 is able to exchange data (bi-directional) with the LX 20, Colibri and Posigraph. The following data can be transferred:

- \*.DA4 files (WPT and TSK)
- Flight info

To establish data transfer with the LX20 use the following steps:

STEP	LX 20	LX 700
1	Main MENU / LOGGER	SETUP / TRANSFER
2		ENTER
3	READ or WRITE key	Select t. function
4		ENTER

The LX 700 acts as a master device and forces the LX 20 to respond to the commands.

Transfer functions on LX 700

READ WPT/TSK
READ INFO
READ ZONES
WITE WPT/TSK
WRITE INFO
WRITE SETUP
WRITE ZONES

Read means LX 700 will read data from LX 20 or Colibri and vice versa

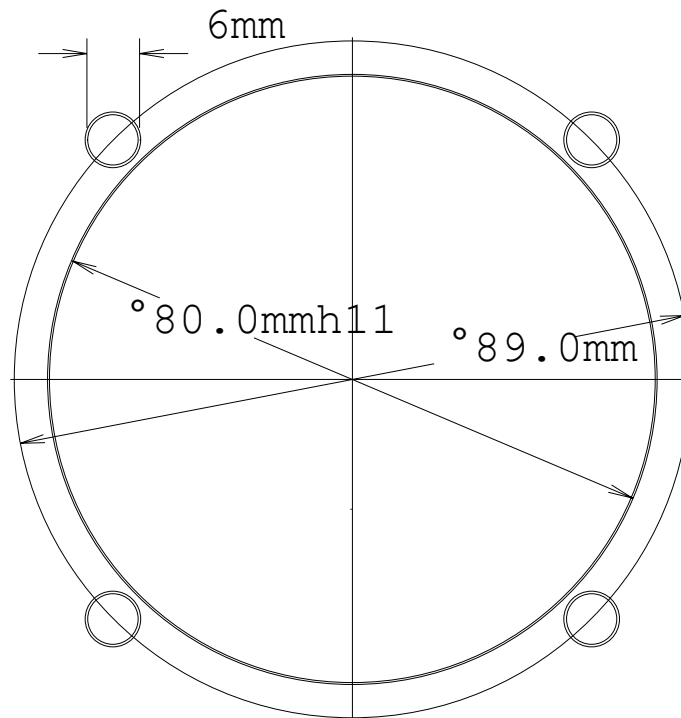
Read zones means copy of confirmation zones settings from Colibri or LX 20 and write means vice versa.

Write setup will write logger setup (recording intervals etc) from LX 700 into LX20 or Colibri

Communication with a Colibri or Posigraph recorder is much simpler. The Colibri or Posigraph will **CONNECT** automatically after selecting **TRANSFER** then **ENTER** on the LX 700. The **CONNECT** status is signaled by a series of audio beeps from the Colibri or Posigraph.

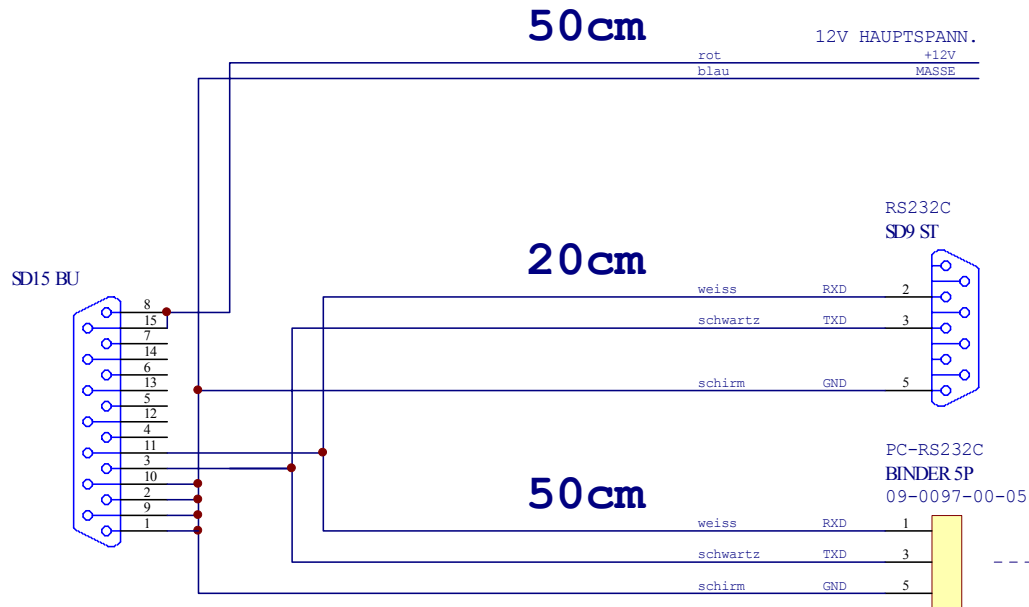
## 5 Installation

- Prepare the cut-out in the instrument panel according to the drilling template.
- Remove the press-in covers from the four main selectors on the LX 700. You can now see the mounting screws.
- While holding the knobs, slacken the screws with a screwdriver. Now the knobs can be removed (never use power to remove the knobs, you can **damage rotary** switches). By problems **hit on the slacken screw** a little bit.
- Remove the four special type screws.
- Position the LX 700 in the cut-out in the instrument panel.
- Tighten the LX 700 with the special screws (8 mm tool).
- LX 700 Tighten the knobs and replace the covers

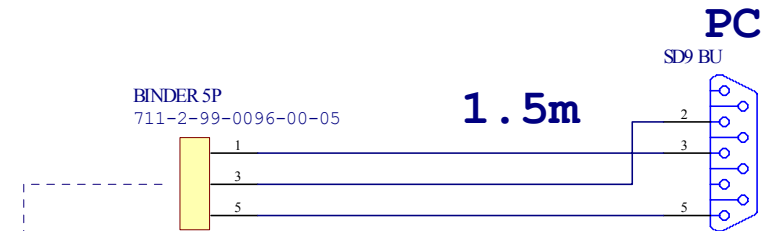


# 5.1 Wiring

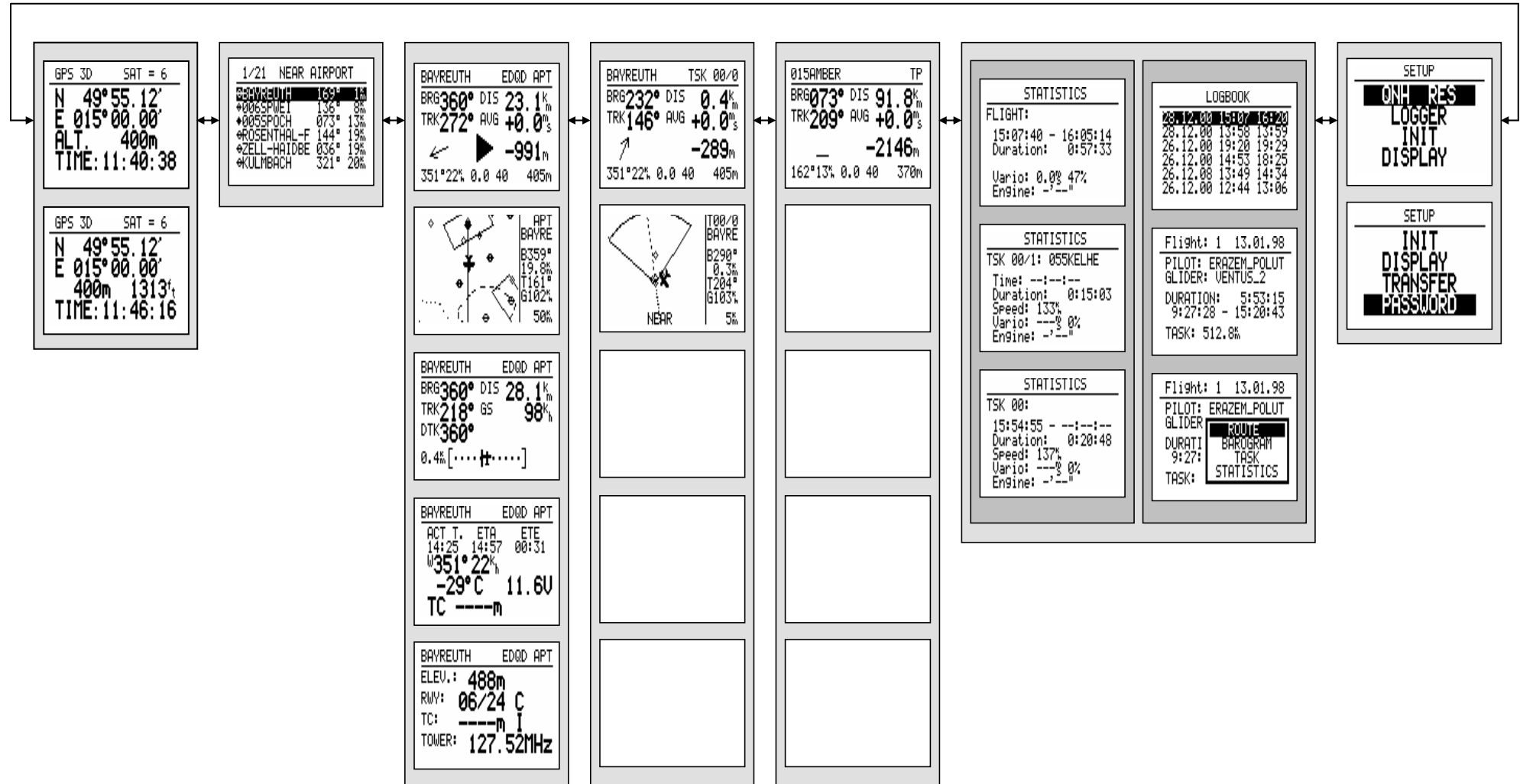
## LX700 VERSORGUNGSKABEL



## LX700 PC KABEL



## 5.2 Tree structure Diagram



## 6 Passwords

96990 System password  
99999 Delete flight recorder

## 7 Revision history

<i>V1.0</i>	<i>New Jan 2004</i>

# 8 Appendix

