Colibri

IGC FLIGHT RECORDER

Please read this manual before operating the unit

Version 3.0 Feb. 2001

CONTENTS

1 GENERAL INFORMATION:

Thank you for purchasing the LX Colibri Data Logger. You will find the unit an accurate, reliable and a valuable aid to your gliding pursuits. The LX Colibri Logger is an FAI approved flight logger/recorder. The unit is extremely small and practical (55x100x32mm). The Colibri is operated via seven keys identified by symbols. All the data and flight information is displayed on a 2x8 character LCD matrix display. A BNC

connector is used to connect the GPS antenna to the unit. The instrument is turned on by inserting the power lead (telephone type connector) into the appropriate socket on the Colibri.

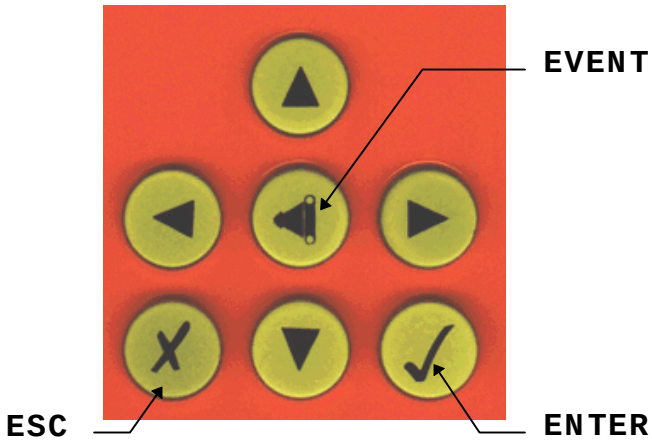
Technical data:

- Power Supply…….. 10-15 V DC
- Current consumption…….. 100 mA / 12 V
- 16 channel GPS receiver
- NMEA and Winpilot output
- Dimensions……. 55x100x32mm
- Weight……. 220 g
- Engine noise sensor is standard equipment
- Zoom feature
- Data Retention……. Internal Lithium Battery

2 CONTROL KEYS

All necessary data input and manipulation can be done using the seven keys as shown below:

- DOWN arrow
- UP arrow
- RIGHT arrow
- LEFT arrow
- ENTER
- ESCAPE
- EVENT



The unit has four main menus. On power up the GPS STATUS page is displayed. Pressing consecutively the right arrow key displays the NAVIGATION page, then the SETUP menu and finally the VIEW LOGGER menu. Pressing the left arrow returns to the previous menu.
When power is applied the Colibri will display the program version followed by the serial number of the unit and the owner/pilots name for 20 seconds.

GPS STATUS menu - After the initial start up procedure the logger automatically switches to this menu and commences acquiring satellite fixes. If the aerial is not connected or the aerial is covered by obstacles, such as buildings, then GPS BAD, SAT = 0 will be displayed. Satellite acquisition time from a cold start is under 60 seconds. A warm start is typically 30-seconds.

3 NAVIGATION menus – From the GPS STATUS menu pressing the right arrow brings up the 3 NAVIGATION menus (TP, TSK and APT). This shows bearing, track, distance and the first four letters of the selected turnpoint or airport. Pressing ESCAPE will cause the glider's ground speed to be displayed **in place of** the turnpoint's name. Turnpoints, which are stored in the database can be selected and also edited as required from this screen. Pressing the right arrow again takes you to the;

SETUP menu**-** This page is not used during flight. It is normally used prior to the flight to define the logger and task parameters. All pilot and glider data are defined in this menu. From this menu pressing the LEFT arrow will return to the Navigation screen or the RIGHT arrow will lead to the VIEW LOGGER menu.

VIEW LOGGER menu – This is selected for flight analysis after landing. Flights made with the logger are stored in the unit (up to 100hrs depending on logging parameters) and the **information is retained even when the power is switched off**. Flights can be analysed via the Colibri's screen (after landing) without the need to transfer flight data to a PC. This menu will not be displayed if there are no flights stored in the logger.

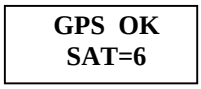
All four main menus have **sub-menus .** To enter a sub menu use the **vertical arrows**. A detailed description of the sub-menus is contained further on in the manual. It is recommended you read this manual whilst referring to the menu structure diagram at the back of this manual.

The **ENTER** key always starts the edit procedure and confirms options selected or the data entered.

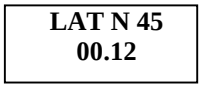
The **ESCAPE** key has two functions; go back a step in the menu and to accept the whole row in the editing procedure. Also the **ESCAPE** key cycles between the three navigation screens in the navigation menu. **During flight** this key starts the wind calculation procedure when pressed in the navigation page.

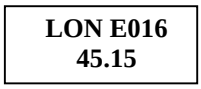
3 GPS STATUS menu

This menu is active when the instrument is switched on. There is **no edit** function, as this menu contains no user definable data. This means the data can only be read from the display. By using the UP and DOWN arrows the following pages of the GPS STATUS menu are displayed:



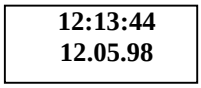
GPS status and number of satellites acquired



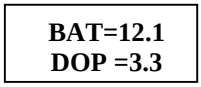


Coordinates of your current position

Altitude referenced to the ISA 1013 Hpa pressure level



Current Time/Date



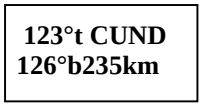
Battery voltage and DOP (Dilution of Position. Which is a measure of the accuracy of the GPS position. The lower the number the better)

Recording status; STOP or RUN is displayed and the Logger Recording Capacity in hours.
Do not switch off the logger at the end of a flight until LOG:STOP is displayed.

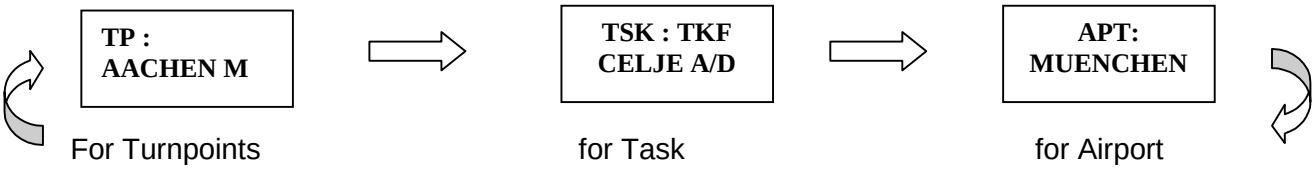
NOTE: The logger capacity figure displayed on the above screen doesn't indicate the remaining portion of unused memory ! It displays the **total memory** available for flight recording, which depends upon the logging time interval and additional data options selected for recording. **As old data is automatically overwritten by new data** (ie. the current flight) you **don't** need to clear the memory prior to flight. Hence, after a flight you will find the logger memory number displayed has remained unchanged. However, changing the recording interval or selecting additional data recording options (see section 5.1.d of the manual) will change the amount of memory available and change the value displayed.

4 NAVIGATION MENUS

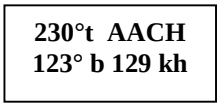
There are 3 navigation menus available; Turnpoint, Task, and Airport (TP,TSK and APT) which allow in-flight navigation to the selected turnpoint or airfield. Each menu is explained below. Also editing of the turnpoint and task data is possible. The navigation screen in each of the three menus looks like this;



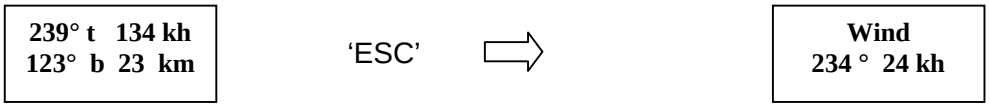
123° is the current track of the aircraft, **126**° is the bearing to the TP, **235km** is the distance to the TP and **CUND** is the first four letters of the turnpoint (designator). The Colibri counts down the distance to a TP in 1km increments, except when within 10km of the TP. Then the Colibri displays the distance to the TP in 100 metre increments. This is very useful as you approach the turnpoint and often loose sight of it under the nose of the aircraft. To select the navigation menus use 'left/right' arrow keys. From the Status Menu, pressing the 'Right' arrow brings up the Turnpoint navigation screen. Pressing the 'Right' arrow again brings the Task Navigation menu, 'Right' arrow again to the Airport menu.



When you have reached the menu you require, wait 2 seconds, the Colibri will display the following data, as per figure 1.



From the above screen, press the 'ESC' key to replace the TP name with the aircraft's groundspeed, 'ESC' again to display the wind calculation. 'ESC' again to return to the beginning.



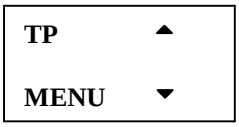
The wind calculation is active only during thermalling. After two turns the wind direction and speed will be presented. The wind calculation is based upon ground speed changes during the climb. It is recommended that you keep the aircraft's speed constant whilst thermalling to ensure the most accurate wind measurement possible.

4.1 TP (Turning points) Navigation menu

To select a turnpoint from the Colibri's turnpoint database, use the 'up' and 'down' arrows, the turnpoints are sorted alphabetically, holding down the 'Up/Down' key will increase the scrolling speed through the

TP database. When the desired TP is displayed release the arrow key, and after a short pause, the navigation data, i.e. track, bearing and distance to the selected TP will be displayed. The **navigation display** will be shown as above (fig 1.).

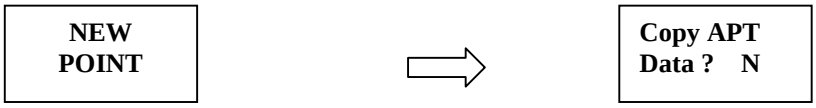
If required TP data, i.e. coordinates and name can be edited any time. The procedure is started by pressing 'ENTER', whilst in the TP navigation screen. The screen will display;



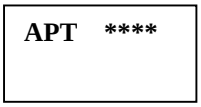
Using the 'Up/Down' arrow keys, the pilot can select from the following options; **NEW POINT, EDIT TPOINT, DELETE TPOINT** and **EDIT TASK**.

The turning point capacity of Colibri is 600 turning points in the well-known DA.4 format. This is fully compatible with LX 5000, LX 20 and other LX instruments.

4.1.1 ENTERING A NEW TURNPOINT- from the airport data base.



Press 'Enter' when 'NEW TPOINT' is displayed on the screen, 'Copy APT' is shown, press the 'Down' arrow, to select 'Y' for yes, then press 'Enter'. The copying procedure will follow. The Colibri has its own airport database and additional turnpoints can be copied from this database. Replace the four stars with country designator you require, ICAO airport code (up /down arrows and Enter).



Confirm by pressing 'Enter' and a new turnpoint will be added to the TP database for further use. With an unknown ICAO code, simply press 'Escape' and select the country.

Replace the four stars with the first four letters of the airport's name. You can enter less letters, say the first letter only, then press ESCAPE. Now the display will jump to the first airport whose name starts with that letter (use the UP or DOWN arrows to make your selection).

Confirmation with all four stars with the ‘Escape’ key, which will show you all the airports of the selected country (or State.). After pressing ‘Enter’ the airfield will be definitively be copied to the TP database and ready for navigation. NOTE an APT database has not yet been compiled for Australia.

4.1.2 ENTERING a NEW TURNPOINT

Manual entry of a new Turnpoints data is possible, select the ‘N’ option from the Copy APT menu.

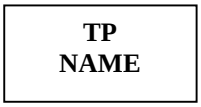
Input a maximum of 8 Characters for the turnpoint’s name. After the input of all the characters, the coordinates (LAT, LON) and the altitude the following message appears.

Select ‘Y’ using the UP or Down arrows if the data is correct. If you select ’N’ the input procedure will recommence.

4.1.3 EDITING AN EXISTING TURNPOINT

Select the ‘EDIT TPOINT’ option and press ‘ENTER’,

Enter



Select the TP by entering the first four letters of the TP’s name and change the data as required. You can cycle alphabetically through the TP’s using the ‘Up/ Down’ keys by entering just the first letter (or none). Use the ‘Up/Down’ keys to enter a character where the cursor is flashing and use the ‘right’ arrow key to move across to the next character. Four presses of the ‘Right’ arrow key will bring you to the start of the TP database, i.e. the first turnpoint.

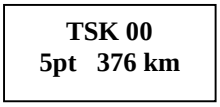
4.1.4 DELETING A TURNPOINT

Select the TP and confirm the delete procedure with ‘Y’.

4.1.5 EDITING A TASK

Up to 100 tasks can be stored into the Colibri's memory. To **edit a stored task** use this menu**.**

With 'EDIT TASK' displayed press the 'Enter' key and the task database is accessed. The first stored task, Task 00 displayed. Using the vertical arrows you cycle through the tasks numerically, stop when the TSK you wish to edit is shown. Press the 'Enter' key. Note; The task is designated with numbers (0-99), the number of turning points in the task (max. 10) and the distance. See figure below,



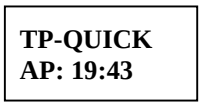
If no tasks are stored in the Colibri, the message 'NOT PROG' will appear, however, the task can be programmed as per editing a stored task.

Press 'Enter' again to display the first TP of the task, TP0, which is the start point. You can use the 'Up/Down' arrow keys to cycle through the turnpoints of the task. Press 'Enter' when the desired TP is reached. You then have three options. With the ' **INSERT POINT'** option an additional TP one position lower than the one selected will be entered. The '**DELETE POINT'** option will delete the selected turnpoint and hence reduce the number of Turnpoints of the task. The '**SELECT POINT'** option will overwrite (replace) the selected turnpoint with a new one. The turnpoint selection procedure is the same as described above, i.e. replacing stars with characters. To close the procedure press '**ESC' until you reach navigation menu.**

NOTE; The tasks from this menu can be transferred to your PC, however it is much easier to compile tasks on your PC first then upload them to your Colibri, as per turnpoints

4.1.6 EVENT BUTTON

This special key has two functions during the flight. A quick press will activate the event function which changes the sampling rate interval briefly as defined in the Logger Setup menu. After a longer press of the event button the following will appear on the display:



'AP' stands for actual position, and means your current position is stored as a turnpoint with the following name 'AP:19:43'. 19:43 is the time you marked the position, which allows you to distinguish several EVENT marked positions from one another in the TP database. The names of these 'AP' turnpoints can be changed using the edit function if required. This feature can be used to mark thermals, an outlanded glider (hopefully as you fly over it!) etc. As the marked position is stored in the turnpoint database, you can select one of the marked points in the NAVIGATION screen and fly to it later if required.

4.2 TSK NAVIGATION MENU

This menu has two important functions.

1. **Navigation** - It allows in-flight navigation using only the turnpoints of the task. This prevents manually cycling through the entire TP database when on a task. Please note after the task has started, i.e. you have entered the start point cylinder or sector, **there is an automatic change over to the next Turnpoint of the task after rounding the current TP.**

2. **Task declaration for the logger** - after take off **the selected task is written into the logger** and will remain there till landing. **The selected task is automatically declared after take off.**

Only **one TSK** can be memorized in this menu. To input a task in to this menu use one of two methods:

Press the 'Enter' key and the 'EDIT TASK' option is displayed, Press 'Enter' again and you can cycle through the TP's of the task, changing the TP's as required. That is, press 'Enter' when the old TP is displayed and you then have the SELECT, INSERT,DELETE TPOINT options.

OR

Press the 'Enter' key and the 'EDIT TASK' option is displayed, press the 'Down' arrow key and the 'COPY TASK' option is displayed. Press 'Enter' again and the 100 (0-99) task database stored in the

Colibri is accessed. Use the 'Up/Down' keys to copy the task you desire.

NOTE: - Editing task in this menu will not change the task as stored in the task library (0-99).

How to fly the TSK

Prepare the task using copy or edit method as described above. The task stored into the IGC logger must have following structure:

-TAKE OFF
-START POINT
-TURNPOINTS
-FINISH POINT
-LANDING

TAKE OFF and LANDING are classed as turnpoints as well. Which means they should be entered using the TP library. The stored tasks in the TP library don't have take off and landing points. So after having copied a task from the library, you will find the TAKE OFF point = START point and the FINISH point = LANDING point. Using EDIT procedure it is possible to change these two points so the task matches the FAI structure shown above. TASK declaration is easier to do using the LXFAI program and uploading the task via the 'WRITE FLIGHT INFO' menu option.

IN FLIGHT

Immediately after take off the TASK navigation screen will change automatically from the TAKE OFF point to the START POINT (TSK:STA). That is the navigation screen will automatically display data to guide you to the start point of the task.

Once you reach the START point (photosector, cylinder …) an acoustic alarm is activated and a **manual change-over** to the first turning point is necessary (use the 'Down' arrow key). Often you fly through the start point sector many times before actually commencing your task (i.e. in competitions). You must manually select the first Turnpoint of the task to tell the Colibri you have actually started the task.

When you reach the first TP of the task, the Colibri will **automatically** changeover to the next turnpoint of the task and display navigation data to this turnpoint. No manipulation is necessary**.**

Important Note;

Task editing during the flight is possible without any limitations (i.e. for POST), but the task as declared in the logger will remain unchanged. **Therefore there is no chance you can destroy the FAI deceleration in the logger during the flight.**

It is highly recommended that you check the task (declaration) before take off. Do it simply by pressing the 'Down' arrow key when in the Task Navigation screen. The Takeoff, Start, Turnpoints, Finish and Landing points will be displayed in order. Flying out of this menu has no influence on the FAI declaration. To jump over a TP not reached in flight use the 'Down' arrow key or edit the task as described above.

4.3 APT NAVIGATION MENU

The Colibri is able to memorize approx. 5000 airfield points. From this Colibri database it is possible to select airports and navigate to them. Additionally, the airports are separated by distance, building an **near airport** table. The selection of an airport is completely the same as coping **them into TPs**.
The near function is active permanently, the nearest airport is to be **found by pressing the 'up' arrow.**

5 SETUP MENU

All the important logger parameters are defined in this menu. Press the 'Right' arrow key from the APT navigation screen to display the SETUP MENU.

Using the 'Up/Down' arrows the following sub menus can be selected.

5.1 LOGGER SETUP

All important logger parameters are defined in this menu. With 'LOGGER SETUP' displayed press 'ENTER' and the RECORD INTERVAL menu option will be displayed. From the RECORD INTERVAL menu the 'Down' arrow will display in order additional menus, they are; OBSERV. ZONE, OBS. ZONE BEEP, I-RECORD DATA, J-RECORD DATA, FLIGHT INFO. Press the 'Enter' key to select the displayed menu. Various settings can be altered as required and detailed below.

5.1.1 RECORD INTERVAL

NORMAL: 12s	After pressing 'ENTER' the cursor is activated, the recording (logging) interval is set . Shorter recording intervals reduce recording memory. This is shown in the GPS STATUS menu.
NEAR TP: 2s	This sets the recording (logging) interval, which is used as the glider nears the **Turnpoint.**
NEAR RAD: 1.0km	Inside this radius around the TP, the logging interval (as set above) is used. Radius can be from 0.1 – 2 km. Dimensions can be set by the user.
PEV INT: 2s	This setting defines the logging interval which is used after the **EVENT** key is pressed.
PEV FIX: 30.	This determines the number of fixes stored after the **EVENT** key is pressed.

For example: If PEV INT 2s, PEV FIX 30 is set, then after the EVENT key is pressed 30 fixes, 2-seconds apart will be recorded.

5.1.2 OBSERVATION ZONE

Using the Colibri, the pilot is able to define practically all known start, turning point and finish procedures as set by the FAI or competition directors. That is the Colibri has programmable sectors, cylinders, or arcs around a particular coordinate. The Colibri will 'Beep' when the glider has entered the sector that has been defined. After pressing 'ENTER' in the OBSERV. ZONE menu, the following sub menus will be available. Use the 'Up/Down' arrows to cycle through the menu list.

OBS.ZONE TEMPLATE	**START ZONE**	**POINT ZONE**	**FINISH ZONE**

OBS. ZONE TEMPLATE - turnpoint rounding confirmation selection

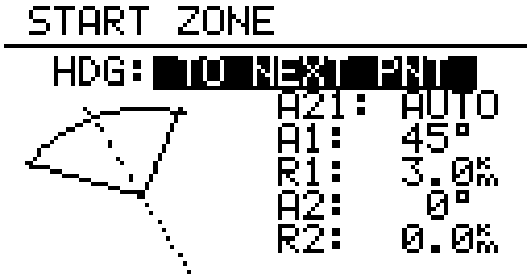
This option allows you to select quickly and easily either the 500m cylinder or FAI Photo-sector confirmation for start, finish and turnpoint rounding. Press 'Enter' with OBS.ZONE TEMPLATE displayed on the screen, 'TEMPLATE PHOTO' will then be seen with a flashing cursor next to 'PHOTO', press 'Enter' again to select the FAI photo-sector option, or press the 'Down' arrow key. 'Cylinder' will now be displayed, press 'Enter' to select the cylinder method of turnpoint rounding confirmation. Please note, any previously programmed start, finish or turnpoint sector settings will be lost and overwritten with either **photo sector or 500m cylinder templates.**

START ZONE

From the OBS.ZONE TEMPLATE menu, press the 'Down' arrow key to reach the 'START ZONE'. Press 'Enter', which will open up this menu option and allow the pilot to program the start zone as required. A number of variables can be set, and the meaning of each explained below. Start zone defines the start procedure by departure. The zone consists of two angles(A1,A2) two radii (R1 and R2) and the zones direction of symmetry(a12). The first setting to appear, defines the orientation, this is the 'HDG' setting.

- HDG: Means orientation of the symmetry axis of the sector.
- A21: Direction of the symmetry axis (in most of the cases AUTO)
- R1: Radius of the sector, e.g. 3km for the FAI photo sector.
- A2: Like A1, used for creating combined sectors.
- R2: Like R1, also used for combined sectors

The figure below shows the settings for an FAI photosector start zone. NOTE: This is set automatically if you select the 'PHOTO' template as described in the paragraph above. It is shown hear for explanatory purposes.



The three start zone orientation (HDG) options are;

- START Hdg=NEXT - defines a start orientation directed to the next turning point. That is the symmetry axis is directed to the next turn point. This option was meant for Cats Craddle.

- START Hdg=1TPR - defines a circular segment (arc) from first turning point through the start point. Turn point radius (TPR) zone.

- START Hdg=FIX - defines a fixed value set by the pilot. The symmetry axis can be adjusted to any direction. This is the only option for which A21 is not set to AUTO.

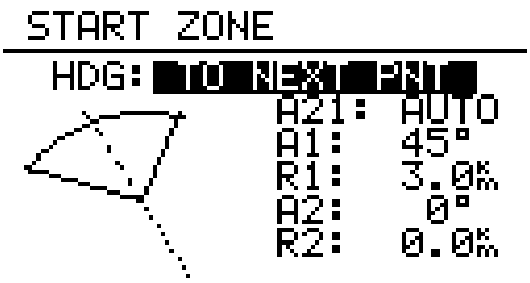
NOTE: - If NEXT and 1TPR are selected, then a12 setting is set to auto, and cannot be changed by the pilot.

At first, this sounds very complicated, but a few examples will help you to understand the meaning of these settings.

Example 1:

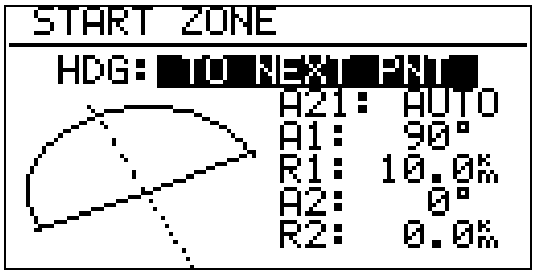
As stated above, the default setting of 90°-FAI photo sector sets a start zone as shown below. The HDG is set to "TO NEXT POINT". Therefore the start zone is symmetrical around the bearing to the next turn point.
A21 is set to AUTO, which is clear because the direction of the symmetry axis of the start zone is identical to the bearing to the first turn point. If A21 is set to AUTO, it's impossible to select this item and change its value.

A1 is 45°, because the half angle is entered.
R1 is 3km.
A2 and R2 are both set to 0, i.e. not programmed.

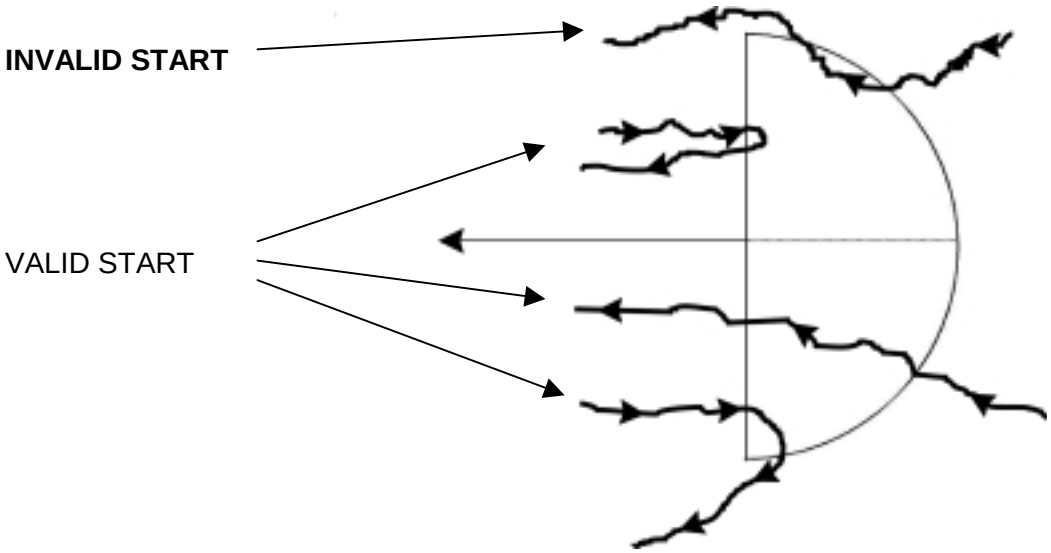


Example 2:

A 180°-start zone with 20km diameter is programmed the following way:

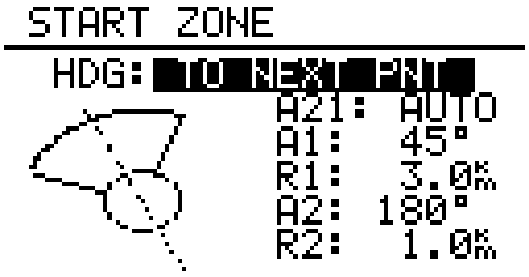


Note:
According to the IGC competition rules of May 2000 the start sector for international championships is the classical start line. Because the Colibri can`t deal with a simple start line but needs a start sector, you use the 180°-sector. The only disadvantage: with the Colibri it's sufficient to fly at least once into the sector so that the device accepts your start as valid. It makes no difference in which direction you leave the sector, but for the sports committee, it does! You definitely need to cross the line to get a valid start! (see picture below)

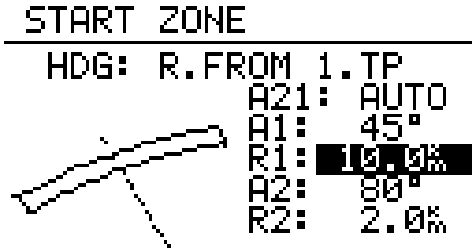


Example 3

The picture below shows the settings for a combination of 90^0 photosector (3 km radius) and cylinder (1 km). The input of angles from the symmetrical axis should always be ½ of the real angle ie 2x 45° = 90°.



Example 4 – Radius Start Zone



The above shows a start zone using Hdg=1TPR which define a circular segment (10 km long) and 2 km deep. The centre of the radius for the arc is taken from the first turnpoint. Both angle values are not important. This sort of start sector was used for the world gliding championships 1999 in Bayreuth. A radius is drawn around the first turnpoint through the start point and a radial segment of a certain length is cut out symmetrically around the start point. The advantage of this system is that a pilot starting far outside at the end of that line has to fly the same distance to the first turnpoint as a pilot starting in the "middle". This is contrary to the classical start line where the distance to the first turnpoint is increasing the more one starts at the edges of that line.

TURNPOINT ZONES

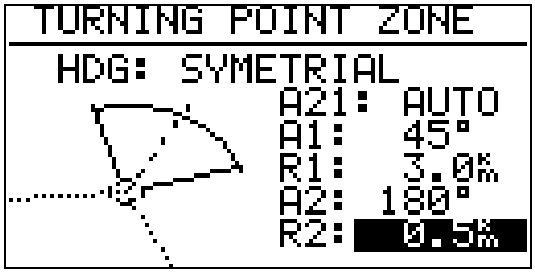
The basic principles of programming the turnpoint zones are the same as for the Start Zone, with a few additional options available. Now select the item POINT ZONE from the OBS. ZONE menu. You will get basically the same options as for the START ZONE. The only difference is that you get more options for the settings of HDG. These are shown below;

- POINT Hdg=SYMM Symmetrical between incoming and outgoing bearings
- POINT Hdg=PREV orientation to the previous TP
- POINT Hdg=NEXT orientation to the next TP
- POINT Hdg=STR. always orientated to start point
- POINT Hdg=FIX defined by pilot

The definitions of A1,A2,R1,R2 and A12 are the same as used in defining the start zone.

Example 5:

We want to adjust the currently valid sector 90^0 photo-sector for the German de-centralised gliding competition rules(DMSt). This is the 90°-photo sector combined with a 500m-cylinder:



Note:
1. The combined photo sectors have to be programmed with the smaller radius for A2 and R2 (R1>R2!!). It's therefore impossible to program the example above in the reverse order.
2. For record flights, FAI badges, 1000/2000km-diploma and for the Barron-Hilton-Cup only the 90°-photo sector is valid, not the 500m-cylinder!!

FINISH ZONE

The finish zone is simpler and has fewer variables. Select the item FINISH ZONE from the OBS.ZONE menu confirm with 'ENTER'. You get principally the same screen as for the previous items. But there are only two options for HDG here:

- FINISH Hdg=LAST axis of symmetry 90° to the last leg
- FINISH Hdg=FIX fix value defined by the pilot andset to any direction (see example below).

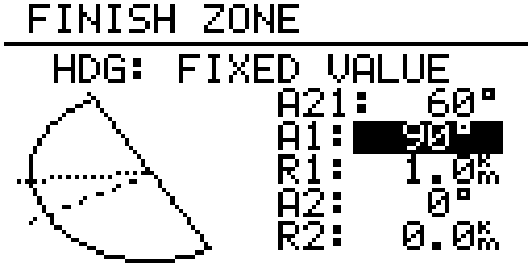
A suggested setting for the finish would be:

Hdg LAST, A1 45°, R1 500m

Example 6:

In a competition the finish line has to be orientated rectangular to the runway's direction, independent from the bearing to the last turnpoint. The airfield's runway has the direction 06/24.

We select HDG: "FIXED VALUE" and can enter either 060° or 240° for A21, depending on the direction of the final glide. E.g. for a final glide in the direction 270° we have to enter A21: 060°. Now the "flat side" of the sector is directed back to the last leg (see picture), the glider will enter the sector crossing the line.



Note: *please be aware that all the examples above are intended to explain the programming procedures and therefore cannot claim absolute accuracy and completeness. For every kind of competition there are different types of sectors and rules for the correct documentation of these sectors. In case of doubt, the*

rules are defined in the FAI Sporting Code section 3. E.g. For most of the national decentralised championships the start sector consists of the 90^0-fotosector combined with the 500m-cylinder, for FAI-

badges, 1000/2000km-diplomas and Barron-Hilton-Cup only the 90^0-fotorsector is allowed. For record flights a 1000m startline is used for taking the start time.

5.1.3 OBSERVATION ZONE BEEP

After the glider has reached the observation zone an acoustic alarm will be activated to inform the pilot. Three parameters can be defined; time (duration of the alarm), interval and period. The interval and period define the wave pattern of the alarm. After setting, it is recommended to use "BEEPER TEST" option to listen to the alarm.

5.1.4 I-RECORD DATA

Additional data recording options are available with the Colibri if required. This menu extends logging data if the yes 'Y' option is selected. These settings are not essential for flight recording but if used they **will** reduce the memory capacity available for flight recording. The memory available for flight recording will be displayed on the GPS STATUS menu screen after selecting the options required. See section 3.

GSP ground speed
TRM magnetic track
TRT true track
TEN total energy
WDI wind direction
WVE wind velocity
ENL engine noise level obligatory **Y by motor gliders**

5.1.5 J-RECORD

The 'J-Record' has the same optional settings as the 'I-Record' and again are non-essential. It will reduce the memory capacity available if used.

5.1.6 FLIGHT INFO

Information about the pilot, glider and observer are entered using this menu. This can be done on a PC running LXFAI, the flight (task) can be declared at the same time.

PILOT: - Pilot's name
GLIDER: - aircraft type, eg Nimbus 3
REG.NUM: - Registration number of the aircraft
CMP.NUM: - Competition number
CMP.CLS: - Competition class
OBSERVER: - Name of official observer

5.2 TIME ZONE

The Universal Time (Greenwich Mean Time-GMT) to local time offset is entered in this menu. For Eastern Standard Time in Australia the offset is +10hrs (+11hrs during daylight saving).

5.3 UNITS SETUP

The preferred units of distance, height and speed are selected in this menu.

5.4 NMEA OUTPUT

The Colibri can transmit GPS data to a final glide/flight computer or palmtop computer via the NMEA 0183 protocol. Obviously the flight computer must have the facility to accept GPS input. The NMEA output data strings transmitted by the Colibri are selected in this menu. The sentences you select for transmission will depend upon the requirements of your flight computer, and you are referred to your flight computer's manual for guidance. The wiring details for NMEA output are contained at the end of this manual. Pay particular attention to the wiring details when making this connection yourself. You will have to connect the appropriate plug for the flight computer to the Colibri's power cable. Your dealer can help you with this. If you do not connect the Colibri to a flight computer then you can ignore this menu.

Note; When using the Colibri with the Winpilot application use the NMEA sentence LXWPx =Y.
To connect Colibri with LX 5000, LX 6000 and LX 20 special cables are available and use the NMEA COM speed of ***4800****.*

5.5 COMM SPEED

The baud rate or communication speed with which the Colibri sends and receives data is set in this menu. For reliable and fast transfer of data to and from your PC set this speed to 19200. The new Windows PC program Lxe is able to adapt the comm. speed automatically to that of the Colibri.

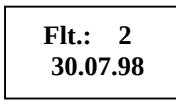
5.6 PASSWORD

Setting the password to 99999 in this menu **clears all the flight recorded data** in the Colibri's memory.

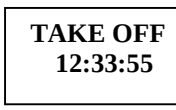
6 VIEW LOGGER

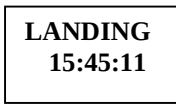
All flights stored in the instrument can be evaluated using this menu. Downloading flight data to a PC will **not** delete the flight from memory. If the memory is full, the oldest flights will be lost, that means an automatic overwrite procedure is used. Hence you will **never** run out of memory for the flight in progress. Only entering 99999 in the Password menu will delete all flights stored in the Colibri's memory. To evaluate a particular flight in the memory, select the **VIEW LOGGER** menu: Note, this menu will not be accessible if there are no flights stored in the logger.

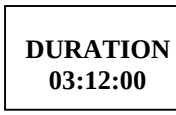
Use arrows (up, down) to select the flight which you want to analyze.

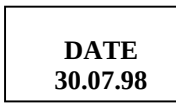


E.g. this is the second flight recorded and was flown on 30.07.98. Press ENTER and the statistics will be displayed



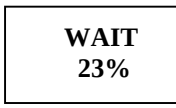




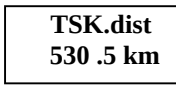


If the flight was not declared this ends the display flight statistics by the Colibri.
Flying a declared task, then additional task statistics will be present.

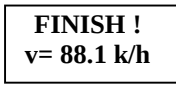
Pressing ENTER in this page will start the task statistics calculation (If task was declared)



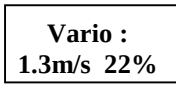
Colibri calculates flight statistics for the declared task. Time to complete the job depends upon flight length



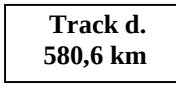
Task distance



Task finished successfully, task average speed = 88.1km/h

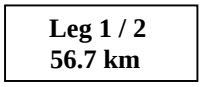


Vario average, percentage of time spent climbing

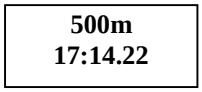


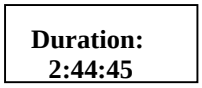
Flown Distance

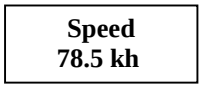
To start the leg statistics press the right arrow.

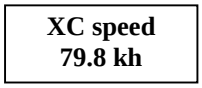


Using the down arrow more information is displayed

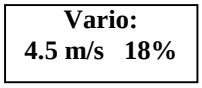








XC speed is the corrected speed on this leg, where both altitudes (overhead TP) are considered.



Average climb rate and percentage of time spent climbing

Flown distance

Using the right arrow will allow the next leg of the task to be evaluated. Note, comprehensive flight statistics will only be displayed by the **Colibri** if the task was declared before flight and actually flown as declared. If the flight was not declared then comprehensive flight statistics can only be viewed after downloading the flight data to a PC and entering the actual task flown using the PC's turnpoint database. For a non-declared flight only the take-off time, landing time, flight duration, and date of the flight will be displayed on the Colibri's screen.

7 PRE-FLIGHT PROCEDURES

The Colibri is ready to be used as a flight recorder as soon as the **GPS OK** message appears. For flight data logging only, it is not necessary to declare a task. With flights for badges and records it is essential to declare the task, and enter the pilot information etc. in the SETUP menu before take off.

The procedure is as follows:

Define departure, TP and finish procedures
Declare the task on the ground
Switch the Colibri ON approx. 5 minutes before take off (this will not reduce the memory).
After landing **DO NOT** switch off the instrument immediately. Wait until the message '**security check'** appears, or **LOG:STOP** appears in the **GPS STATUS** menu. Now you can switch off the unit.

Flight recording (logging) automatically starts when the aircraft's ground speed exceeds 20 km/h and logging will automatically cease approximately 40 seconds after the glider has stopped moving (ie landed). A short power brake during the flight will not produce two flights.

8 PC CONNECTION

The Colibri communicates with a PC via the RS232 port and the cable supplied. Data can then be transferred between the PC and the Colibri. The following functions are available when the unit is linked to a PC.

- Read logger
- Write TP and TSK (DA4)
- Read TP and TSK (DA4)
- Write APT (database update possible only after input of update code)
- Read Flight info
- Write Flight info
- Read Logger settings
- Write Logger settings

.

8.1 PROCEDURE FOR PC CONNECTION:

Install the LXFAI program onto your PC using the supplied CD. Run the LXFAI program. The Colibri will connect automatically giving an acoustic signal and a message **CONNECT** will be shown on the display. The connect message is present as long as the Colibri and PC are connected. All commands are sent from the PC, that means the Colibri is a slave unit.

For instance after selecting **write flight info**, data regarding the pilot and glider will be transferred from the PC into the Colibri. The 'Read' command will transfer data from the Colibri to the PC.

9 WIRING DETAILS and POWER SUPPLY CONNECTION

The Colibri is immediately 'ON' when power is applied to the connector (there is no separate 'ON' switch as such). Each unit is supplied with two cables;

1. Power supply cable for installation in the aircraft.
2. PC cable with power supply and RS232 plug for connection to your personal computer.

The Power Supply Cable in addition to supplying power to the unit also has;

a. Output for an LED to enable GPS monitoring if the Colibri is mounted out of view of the pilot.
b. NMEA output for connection to final glide/flight computers, palmtop computers etc.

The user can make both connections, however some electronics experience is required, particularly soldering skills. It is recommended that you consult your dealer for advice if you do not feel competent to make these connections. The colour coding of the flat, black 6-wire cable used for connection to the Colibri is shown below. Note this applies to the thin wires inside the black telephone type cable. For convention, that is, so that red and black wires are used for connection to a battery or power supply, thick red and black wires are soldered onto the appropriate inner wires of the telephone type cable. Blue for the red(+) and yellow/white for the black (-) respectively. This is important if you wish to splice open the cable to effect NMEA output connection to a flight computer or use the LED output monitoring option. If not, just connect the thick red wire to the red positive '+' terminal of the battery and the black wire to the black negative '-' terminal of the battery.

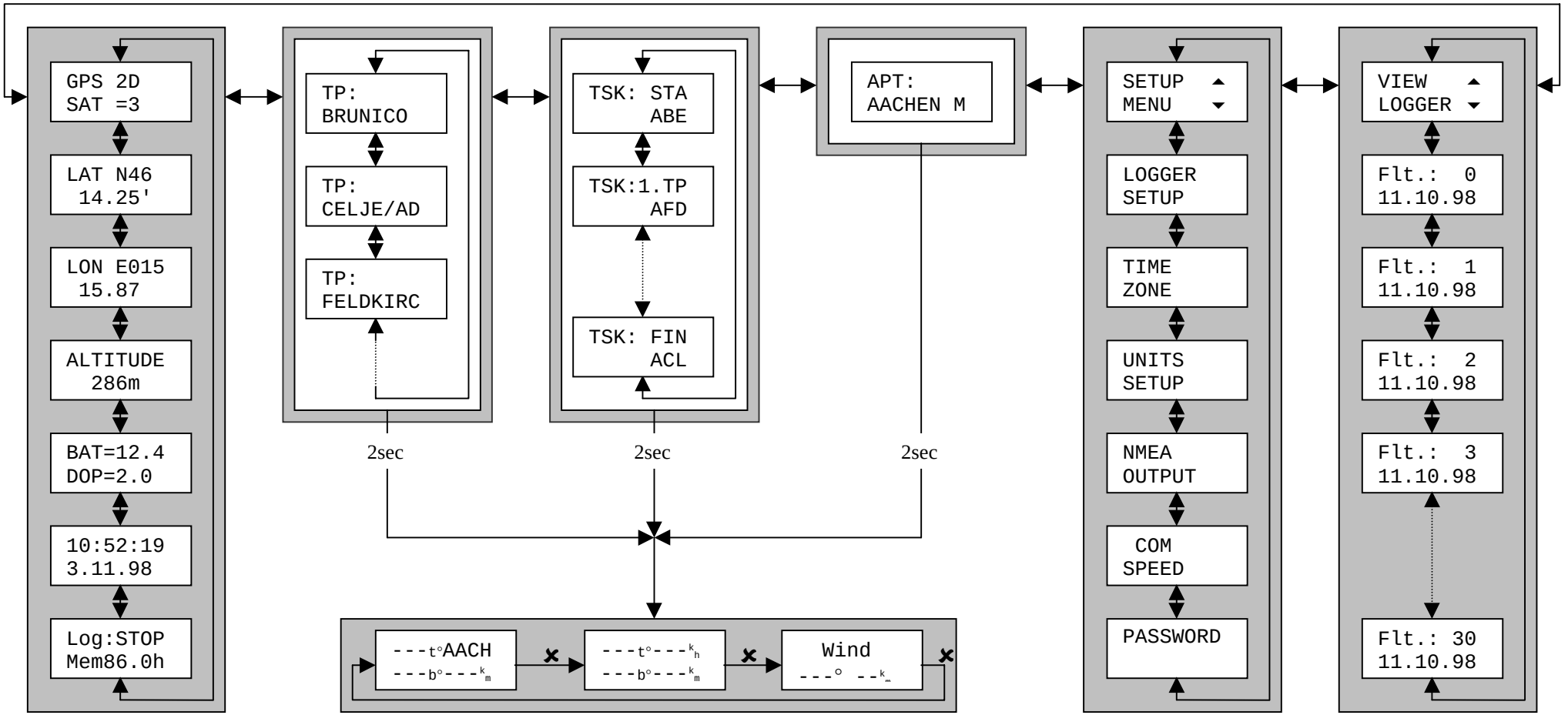
Insert the telephone type connector into the Colibri and the unit is now switched ON! It is recommended that a 1-amp slow blow fuse is connected between the battery and the power cable.

Component wires- of the cable connected to the Colibri via a telephone type plug.

-yellow /white ……..GND (negative of battery)
-black ……Rx (Note, this is not to be connected to the negative terminal of the battery)
-red …….. Tx (NMEA Output)
-green …….. LED Anode
-white ……... LED Cathode
-blue …….. +12V with the supplied power cable a thick red wire is connected to this.

Note: the unit must be connected to a 10-24V DC power source

10 COLIBRI - Menu Structure



11 ADDITIONAL INFORMATION

11.1 A Low Battery warning is displayed when the battery voltage drops to 10.0V regardless of which screen you are using at the time. Press the ENTER button to resume control of the Colibri's functions. Logging does not stop during this time. The unit will continue to operate down the 9.0V. When the battery is exhausted the Colibri will BEEP continuously, and logging will cease. The battery voltage is continuously displayed on a page in the GPS STATUS menu if you wish to check the current state of your battery's voltage.

12 IMPORTANT NOTES

1. It is recommended that you familiarise yourself with the Colibri's operation by connecting the unit to the PC cable and mains power pack. This will enable you to practice the operation of the unit. If you wish to obtain GPS fixes ensure the aerial is connected. Note; no harm will come to the unit if power is applied without the aerial connected. Re-read the manual with the Colibri in hand and its operation will become clear and simple.

2. The Colibri uses an internal lithium battery to retain the memory of stored data. After several years this battery will need to be replaced. Return the unit to the place of purchase to effect replacement. This is not covered under warranty.

*3. **Do not disassemble the Colibri**, that is undo the case screws. This will destroy the unit's security seal and the logger will no longer function. There are **no** user serviceable components inside the Colibri. If you disassemble the unit it will have to be returned to the factory for reassembly. This will also void the warranty.*

4. It is recommended you seek assistance with the electrical connections for the Colibri if you are not experienced with electronic work. Alternatively contact your local agent to seek assistance with your installation.

5. If you intend to connect the Colibri to a flight computer the required NMEA output sentences (as per the flight computer's manual) are selected in the SETUP menu.

6. Turnpoints are best entered into a PC using the LXFAI program (decimal minute format). Once all the TP's are entered into your PC you can download them to the Colibri. Contact your dealer he may be able to supply the turnpoints you require on floppy disk for input into your PC or install them prior to shipping your order.

7. The Colibri's pressure transducer is calibrated with reference to the 1013Hpa International Standard Atmosphere (ISA) mean sea level (MSL) pressure datum.

8. Very rarely excessive 'G' loading and unusual maneuvers, i.e. spins, may cause a shutdown of the Colibri due to confusing data supplied by the GPS unit. Here GPS bad signal will be displayed. You can reset the Colibri in flight by switching the unit off the on again. THIS WILL NOT DISRUPT THE FLIGHT LOG, AND THE COLIBRI WILL CONTINUE RECORDING WHERE IT LEFT OFF (SAVE FOR THE DELAY DURING POWER UP). A VALID IGC FILE WILL STILL BE PRODUCED AND THE PERIOD DURING POWER UP AND SATELLITE ACQUISITION WILL BE SHOWN ON FLIGHT ANALYSIS SOFTWARE AS A GPS DROPOUT.

13 GLOSSARY

PC – Personal Computer
DC – Direct Current
LED – Light emitting diode
GND - Ground
Rx – Receive
Tx – Transmit
TSK – Task
Vario – Variometer
INT – Interval
RAD - Radius
APT – Airport
LAT – Latitude
LON – Longitude
V – Volts