



FAI Microlight Commission (CIMA)

Flight Recorder approval document

1 IDENTIFICATION

- 1.1 **Approval document ref.:** OBS002
- 1.2 **CIMA approval date:** 22 May 2008
- 1.3 **Flight recorder name:** Air Observer Micro logger
- 1.4 **Manufacturer:** Tilt-Tech CC, 54-3 Baard avenue, Raslouw, Centurion, Johannesburg, South Africa.
Tel +27-12-6667342 Fax +27-12-6667343
Email: sales@tilt-tech.co.za Website: <http://www.tilt-tech.co.za>
- 1.5 **Applicable serial numbers:** 05 754 onwards
- 1.6 **Hardware version:** RAPTOR-Air
Check this by opening a CIMA spec. .IGC file generated by the FR and transfer software in a text editor and inspecting the line beginning: HFRHWHARDWAREVERSION:
- 1.7 **Firmware version:** Air Observer 7.40 or better.
Check this by opening a CIMA spec. .IGC file generated by the FR and transfer software in a text editor and inspecting the line beginning: HFRFWFIRMWAREVERSION:
- 1.8 **Transfer software name:** Air Observer MLD Data Import
Check this from the transfer software: *menu --> help --> about.*
- 1.9 **Transfer software version:** 1.0C or better.
Check this from the transfer software: *menu --> help --> about.*

2 DESCRIPTION

2.1 Hardware.

A plastic box approx 90mm x 650mm x 30mm. Supplied from new with data transfer cable(s) and software CD. Alkaline types are preferred in order to get maximum recording time. Very simple device with internal 9V (PP3) dry cell battery.. No display. The front panel has a on/off switch, two LED function lights and a USB socket. The side panel has a remote PEV button. The FR is connected to a PC with a standard USB cable.

2.2 Firmware.

Will record up to 43,000 fix points at user definable intervals. Once the memory is full it will wrap (start at the beginning), overwriting any previously recorder data. No data is lost when the FR is powered down or the batteries run out. No controls on the FR apart from the on/off switch. All other configuration is achieved via the PC transfer software. With the FR connected to the PC via a USB cable:

From *menu --> logger --> configure*

- Logging interval: Can be set at values of ≥ 1 sec.
- GMT Offset: Can be set at positive minutes of ≥ 0
- Logger name: Is not editable.

From *menu --> logger --> clear*

- *Sure you want to delete the logger data?* If Yes is selected the FR's memory is cleared.

A basic user guide is attached to this approval as Annex 1

2.3 Transfer software.

Connect logger with USB cable to PC, if the logger is not switched on or the battery is flat it will power up, taking power from the USB connection.

A user guide for *CIMA (AO) Flight Log Downloader* is attached to this approval as Annex 2

The *CIMA (AO) Flight Log Downloader* software is freely available from www.tilt-tech.co.za

2.4 **Not tested in this approval.**

PEV button.

2.5 **Items known to NOT conform to the CIMA FR specification.**

None

3 APPROVAL STATEMENT

3.1 This flight recorder is approved to FAI/CIMA Type 1 standard in the hardware / firmware / transfer software configuration above when it is used for the validation of championship or record flights under the FAI Sporting Code Section 10 in accordance with the conditions below.

3.2 This document must not be interpreted as implying any other form of approval.

3.3 FAI reserves the right to alter the terms of this approval at any time.

4 CONDITIONS FOR USE IN MICROLIGHT CHAMPIONSHIPS

4.1 The FR, together with a copy of this document must be presented to the organization before the start of the championship for compliance inspection and recording of the serial number.

4.2 The pilot must make a data transfer cable and a copy of the transfer software available to the organization if required.

4.3 Before the championship starts the physical serial number, electronic serial number, hardware and firmware versions must be checked by the organization.

4.4 The FR must be clearly labelled with pilot's name and competition number.

4.5 No cable or plug capable of connecting to the serial or USB sockets of the FR or any other device capable of flight data communication with the FR may be carried in the aircraft during a championship flight. Infringement could mean zero task score or even disqualification under the 'Electronic apparatus' rules.

4.6 The firmware's logging interval must be set at a value of between 1 sec and 5 sec.

5 CONDITIONS FOR USE IN MICROLIGHT RECORD CLAIMS

Evidence from this FR may be used to corroborate certain record claims but the OO (Official Observer) and the claimant must be aware that being a CIMA Type 1 FR (see S10 Annex 6, 2.1) it is not capable of recording atmospheric altitude or MOP (means of propulsion) or of secure data generation. Care must therefore be taken by both parties to ensure that in addition to the FR evidence there is sufficient alternative evidence to support the claim (OO observations, turn point photos, landing witness statements Etc.). So long as all the conditions below are complied with then evidence from this FR may be used as the sole proof of no intermediate landing and, so long as there is supporting evidence, it may also be used as an aid to the accurate determination of takeoff and/or landing times and/or gate crossing times and/or leg distances and/or that turnpoints were rounded correctly.

5.1 Evidence from this FR may be used to corroborate claims for any of the following records:

- Distance in a straight line without landing
- Distance in a straight line with limited fuel
- Distance in a closed circuit without landing
- Distance in a closed circuit with limited fuel
- Speed over a straight course
- Speed over a closed circuit

5.2 Before takeoff, the OO shall observe:

- The physical serial number, electronic serial number, hardware and firmware versions of the FR.
- The firmware's logging interval is set at a value of between 1 sec and 30 sec.
- That the FR's memory has been cleared.
- The USB port of the FR is sealed with an OO countersigned sticky label (or similar).
- That the aircraft has the FR on board at takeoff.

5.3 Immediately after landing, or as soon as reasonably possible thereafter, the OO shall observe:

- The FR's serial number is the same as was observed before takeoff.

- The serial and USB ports are still correctly sealed.
 - The entire data transfer process from FR to computer, and subsequent file export to CIMA format .IGC file. The *Competition ID* and *Task No.* fields should be set to ZERO. All other fields should be filled with the pilot's correct details.
 - A printout of the CIMA format .IGC file, countersigned by the OO verifying that it is a perfect representation of all the data obtained from the FR after the flight.
- 5.4 The record claim must include:
- The reference number of this approval document.
 - Verification by the OO that that the FR completely matches the identification in this approval document and all the conditions above were complied with.
 - The signed printout of the .IGC file and the .IGC file on floppy disk or CD.

Annex 1: Air Observer Micro Logger instructions

There is a slider type on/off switch on the front panel. Push it to the right to switch the unit on. Both LED's will start flashing. See the table below for LED functions.

LED OPERATION				
LED	OFF	ON	Flashing Green	Flashing Red
Top LED			Memory OK	Memory over 70% full
Top LED				When Marker switch pressed (only when GPS is locked on signal)
Top LED * When connected to PC		Connected to USB port on PC		
Top LED * When connected to PC			Connected to Serial port on PC	
Bottom LED	Unit connected to PC and GPS switched off		GPS Locked onto signal	GPS not Locked onto signal

Recommended battery to use is a 9V Alkaline like a Duracell. This will ensure optimum performance.

Full operator instructions are freely available from www.tilt-tech.co.za

Annex 2: CIMA Flight Log Downloader instructions

Instructions for use of the CIMA (AO) Flight Log Downloader version 1.0c.

The CIMA Flight log downloader must be installed. It is supplied on the CD with purchase or can be downloaded for free from www.tilt-tech.co.za

- 1 On opening, the user is asked to select a directory (folder) to store downloaded tracks. In a championship, all tracks should always be saved to the same directory.

Do not select any serial port as downloading will be through USB. Connect an Air Observer micro logger to the data cable and the FR will automatically start to be downloaded. The status message at the top of the main window should say what is happening and will say when the downloaded flight track is ready to be saved into an .igc file.

Each recording is divided into 'segments' by the download software, these are displayed as separate rows on the main window. Each segment is identified by the CIMA Flight log downloader when there is a gap of 5 minutes or more in the track recording. Ideally there should be only one segment to each track. A track with many segments is usually either an indication that the FR has been used in a location with a poor view of the GPS satellites or there is more than one track in the FR. Pilots should be advised of such problems when their FR's are returned.

2 Normal championship use

- 2.1 **Identification setting.** The first time a FR is downloaded in a championship the cross-reference between each FR's serial number and the pilot's comp no & name should be saved, this will make subsequent downloads much faster and more reliable.

When a FR has been downloaded, if the *ID* and *Name* fields report a blank space then the FR is unidentified. Copy the *Serial #* (ctrl-c) and click the *Edit* button. This reveals a grid; paste the serial no. (ctrl-v) into the first available row, and enter the competition number and pilot name into the appropriate fields in the same row. It is strongly recommended a certain discipline is maintained with the pilot name; it should be exactly as in the entry list & scoring system preferably in *GivenName FAMIL YNAME* format.

If the FR is the pilot's secondary FR, append *secondary* to the pilot name.

Click *OK* and in the main window click *Force download* to download the FR again. This time the Comp No and Pilot name should be automatically entered in the *Id* & *Name* fields.

Subsequent downloads are much faster if the FR can be automatically identified.

Championship rules of course forbid the 'swapping' of FR's between pilots in a championship but because the FR serial number is saved, it should be impressed on pilots that as far as the download office is concerned their Primary FR as presented for the first download will remain their primary one for the remainder of the championship, it is no good them just switching the identification label.

- 2.2 **Task Window setting.** This acts as an automatic track filter based on the time a recording was made. If a window for a task is set correctly, then only the track segments which were recorded in that time window will be saved to file and other segments (eg test recordings, other tasks Etc) won't.

To set a task window, click the *Edit* button. Enter the task number in the first available row and the broad date and time period in which the task occurred, for example if the task occurred between 15:00 and 17:00, it is suggested you enter 13:00 to 19:00, generally it is unwise to let separate task windows overlap. Click the *OK* button to save it and return to the main window.

Once a task window is set, and, for example you are interested in downloading tracks for task 2, then set this in the *Task* dropdown. The segments to be saved will only be those recorded between the times you set for that task, in other words if the user left his recording from Task 1 on the FR, this track won't be saved. The number of track fix points and PEV events to be saved are displayed in the *Points* and *Events* boxes.

- 2.3 **Downloading.** Once the *Identification* and *Task window* is set correctly then it is a very rapid business to download many FR's and save their tracks to the correct file names without error.

Connect the FR to USB cable, the FR should be identified and start to download automatically. When complete, press the *Save* button. The status message at the top of the main window will show the file name it has been saved to.

If, for some reason the FR doesn't automatically download, check the FR is powered up and press the *Force download* button. If it still doesn't download, some checks include ensuring the FR is plugged in to the USB port and there is no other software running on the computer using that port. As a last

resort, try shutting down the CIMA Flight log downloader and re-starting it, or even try rebooting the whole computer.

If there are no track fix points on the FR in the task window to be saved, then the *Save* button is disabled.

Repeat saves will always write a new version of the file as the CIMA specification requires, track files are never overwritten.

In a championship with many FR's, a certain discipline is required to ensure they are all downloaded, it is usually catastrophic to the task if even one track is not recovered from a FR. Be methodical and place the FR's which have been downloaded in a separate pile to the ones which are yet to be done.

It is recommended all tracks are viewed in a flight analysis program before the FR's are returned to their users just in case one was missed or the track wasn't downloaded properly.

The FR memories should NEVER be reset or emptied by download staff. This is a responsibility of each pilot once the FR has been returned.

In a big championships, once all tracks have been downloaded often the FR download office will waste an inordinate amount of time searching for missing tracks belonging to pilots who actually did not return their FR's at all, perhaps they didn't fly or otherwise did not score in the task. It is therefore wise to either ask Pilots to ALWAYS return their FR's to the scoring office at the end of a task, or otherwise implement some means of knowing which FR's are missing.

3 Occasional use

If you have just one track to download or it is necessary to save a track in a more manual fashion and the FR is unidentified, once the track is ready to be saved you may manually enter the *Id* and *Name* manually in place of the blank spaces by using the "edit" button.

Select the *Manual selection* tab and enter the task number.

With the mouse in the main window, select the segments of the recorded track you want saved together in the track file. According to what is selected, the number of track fix points and PEV events to be saved are displayed in the *Points* and *Events* boxes.

Press the *Save* button to save the track, the status message at the top of the main window will show the file name it has been saved to.

4 Emergencies

Should a track not be saved properly or the task window was set wrong or some other error occurred and the required track is no longer available on the FR for a repeat download, all is not lost, there is an emergency solution so long as the FR was actually connected and allowed to download at least once.

As soon as the status message at the top of the main window says *Download complete. You may save track.* a special file containing ALL the data which was in the FR is always saved automatically by the CIMA Flight log downloader to the tracks directory. The name of this special file is in the format *FrSerialNo-yyyymmdd-hhmmss.igc*

The 'missing' track can (with great care) be reproduced from the contents of this special file by manually copying it to the appropriate CIMA specification file name and, optionally cropping the data if necessary. See S10 Annex 6 for a detailed description of the CIMA file naming protocol and .igc file data.

5 Shortcuts

It may be useful in a championship to set up a shortcut on the desktop so the same tracks directory is always opened when the CIMA Flight log downloader is opened.

To do this, and after you have manually selected a directory once, open the tracks directory in windows explorer and double-click on *loggers.tsv* which is the file the FR identification settings are saved in or *tasks.tsv* which is the file task window settings are saved in.

By default, windows will not know what to do with a .tsv file, so a window will open asking you to associate the program you want to open a .tsv file with. As the CIMA Flight log downloader won't be listed in the installed programs list, click *Other* and navigate to the location of the CIMA Flight log downloader .exe file and select it. Make sure *Always use this program to open these files* is checked and click *OK*.

You may then create a shortcut to *loggers.tsv* or *tasks.tsv* and place it on the desktop. Any time you double click it, the CIMA Flight log downloader will open and the directory it is in will be automatically selected as the one where tracks will be saved.