

SECTION 9

Airplane Flight Manual Supplement AVE 19

Flight Data Logger KAPI Air Control FDR 07

If the KAPI Air Control FDR 07 System is installed into the AQUILA AT01, this AFM-Supplement is applicable and must be inserted into Section 9 of the Airplane Flight Manual. The Information in this AFM-Supplement adds or replaces information of the basic Airplane Flight Manual.



The technical content of this Airplane Flight Manual Supplement is approved under the authority of DOA No. EASA.21J.025.

Schönhagen, 17/12/2007

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Office of Airworthiness

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Document No.:	Issue:	Supersedes Issue:	Date:	Page:
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 1

0.1 LIST OF REVISIONS AND AMENDMENTS

Revision	Reason for Amendment/Revision	Affected Pages	Date of Issue
A.11	Publication of AVE 16 to 21 (minor change AT01-00245)	all	30/11/2007

0.2 LIST OF EFFECTIVE PAGES

Page	Revision	Date
AVE19-1 to AVE19-8	A.11	30/11/2007

Page	Revision	Date

0.3 TABLE OF CONTENTS OF AFM-SUPPLEMENT AVE 19

Section 1	GENERAL	AVE19 - 3
Section 2	OPERATING LIMITATIONS	AVE19 - 3
Section 3	EMERGENCY PROCEDURES	AVE19 - 3
Section 4	NORMAL PROCEDURES	AVE19 - 3
Section 5	PERFORMANCE	AVE19 - 4
Section 6	WEIGHT AND BALANCE	AVE19 - 4
Section 7	SYSTEMS DESCRIPTION	AVE19 - 4
Section 8	HANDLING, SERVICE AND MAINTENANCE	AVE19 - 8

<i>Document No.:</i>	<i>Issue:</i>	<i>Supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 2

1. GENERAL

This AFM-Supplement contains a general description of the KAPI Air Control FDR 07, its operation and integration into the AQUILA AT01. A more detailed description as well as comprehensive operating instructions is provided in the manufacturer's documentation "user documentation and installation instructions V1.07" dated 1 March 2007 and later issues.

The information contained within this Supplement is to be used in conjunction with the complete Airplane Flight Manual.

2. OPERATING LIMITATIONS

The KAPI Air Control FDR 07 is installed as optional equipment whose failure is uncritical under all operational conditions. There are no changes to the operating limitations of the basic Airplane Flight Manual.

The installation of a KAPI Air Control FDR 07 does not release the pilot from his responsibility of proper flight logbook recording.

3. EMERGENCY PROCEDURES

The KAPI Air Control FDR 07 is not equipped with a display and does not serve as a direct visual information source. The KAPI Air Control is not a component of the instrument panel to be operated during flight. The KAPI Air Control FDR 07 is activated when engaging the **ALT/BAT**-Master Switch at the instrument panel and works automatically and independently.

A partial or total failure of the KAPI System does not affect or have an influence on the other systems in the airplane. In this case, the data recording works just partly or not at all.

4. NORMAL PROCEDURES

ENGAGING THE KAPI AIR CONTROL FDR 07

ALT/BAT-Master Switch **ON**

The KAPI Air Control FDR 07 starts with a self-test routine and is automatically ready for operation after a few seconds.

<i>Document No.:</i>	<i>Issue:</i>	<i>Supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 3

DISENGAGING THE KAPI AIR CONTROL FDR 07

A manual disengaging of the KAPI System is not possible, its deactivation is automatically carried out when the **ALT/BAT**-Master Switch is disengaged (active Power management).

5. PERFORMANCE

No change to the basic Airplane Flight Manual.

6. WEIGHT AND BALANCE

The change of the empty weight and corresponding centre of gravity after the installation or removal of the KAPI Air Control FDR 07 has to be determined and recorded in accordance with section 6 of the basic Aircraft Flight Manual.

7. SYSTEMS DESCRIPTION

The **KAPI Air Control FDR 07** Data Logger System is derived from the KAPI Flight Data Recorder (FDR) and is designed to provide a system for the recording, storing, processing, evaluating and transmitting of technical and operational flight parameters. The KAPI Data Logger System records the following technical parameter of the aircraft in-flight:

- Airspeed (IAS)
- Groundspeed
- Aircraft Position
- Vertical acceleration
- Course
- Aircraft Altitude
- Engine Speed
- Oil Temperature or Oil Pressure
- Cylinder Head Temperature

The main unit of the KAPI Air Control FDR 07 is based on a one circuit board system controlled by a microprocessor which is produced at VDO and is especially designed for the application on small airplanes. For the acquisition of the various flight data, the KAPI System uses a number of especially adapted sensors as well as a system-related

<i>Document No.:</i>	<i>Issue:</i>	<i>Supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 4

evaluating software (“KAPI evaluating program”) which serves as a tool for the visualization of the data recorded and stored by the data logger system.

The recorded and stored data can be read out by a data carrier (MMS Card). In addition, the data may be alternatively read out by directly transferring it to a personal computer via GSM remote transmission. A direct readout of the data is also possible by using the enclosed data cable. For detailed information on the data read-out, refer to the handbook of the “KAPI evaluating program” provided by the manufacturer KAPI electronics GmbH.

An activation of the KAPI System by engaging the **ALT/BAT**-Master Switch is not necessary for the data transfer to external peripheral equipment. The Data transfer is carried out solely when the airplane is on the ground.

In the following, examples are shown of the miscellaneous illustration possibilities of the recorded and stored flight data:

Example: Flight Logbook:

```
*****
BLOCKSTART    07:05 o'clock
Take OFF      07:07      Airport EDAV RUNWAY 28.
LANDING       07:39 o'clock Airport EDCV RUNWAY 27.
BLOCK OFF     07:40 o'clock

Flight duration : 0:32 h
```

Example: KAPI raw data set

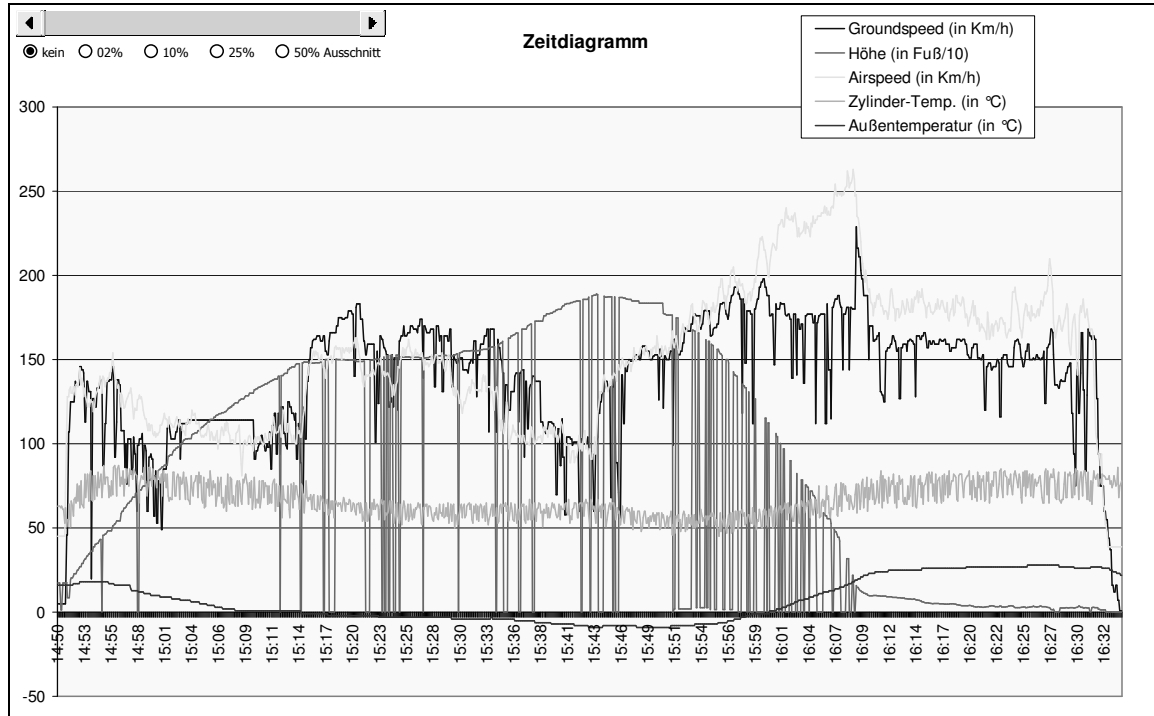
```
KAPI->27072005/1708/N523523-E0135512
/ft:00282/GS:000/TC:255/
AS:0/CHT:75/
OT:55/WT:XX/OUT-T:22/
RPM:XXXX/G-MAX:1,0/G-MIN:XXX//LOG-ADR:823822
/<-CODE

$GPRMC,170813.029,A,5235.2382,N,01355.1253,E,0.00,255.79,270705,,A*6F
$
$GPGGA,170814.029,5235.2381,N,01355.1252,E,1,04,07.0,86.6,M,38.8,M,,*5B

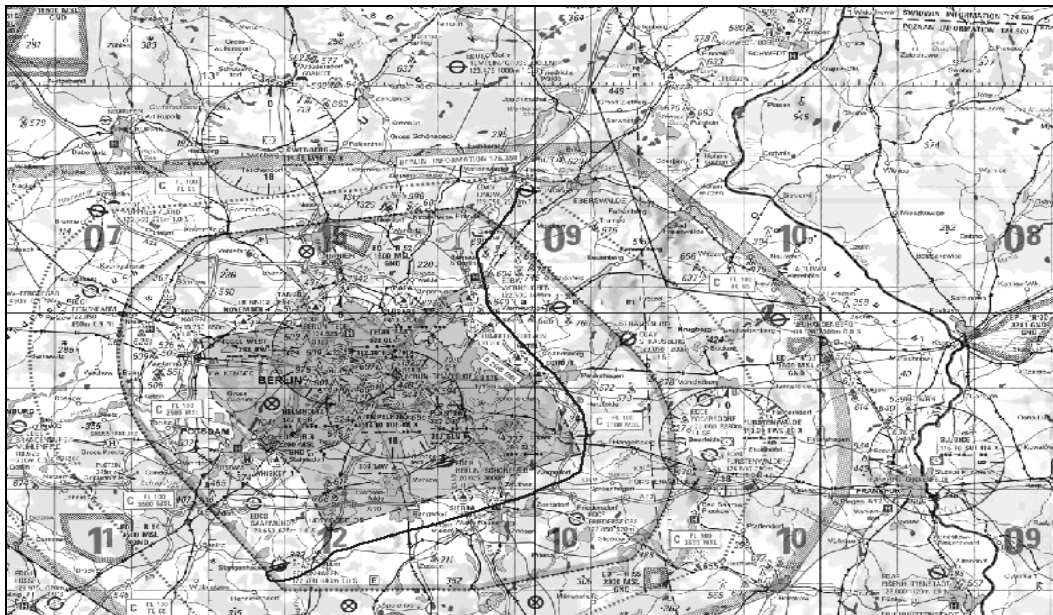
TIME/MEMORY(s)= 23
KAPI->27072005/1708/N523523-E0135512
/ft:00282/GS:000/TC:255/
AS:0/CHT:74/
OT:55/WT:XX/OUT-T:22/
RPM:XXXX/G-MAX:1,0/G-MIN:0,9//LOG-ADR:824192
/<-CODE
```

Document No.:	Issue:	Supersedes Issue:	Date:	Page:
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 5

Example: Graphic Evaluation (Engine and GPS Data)

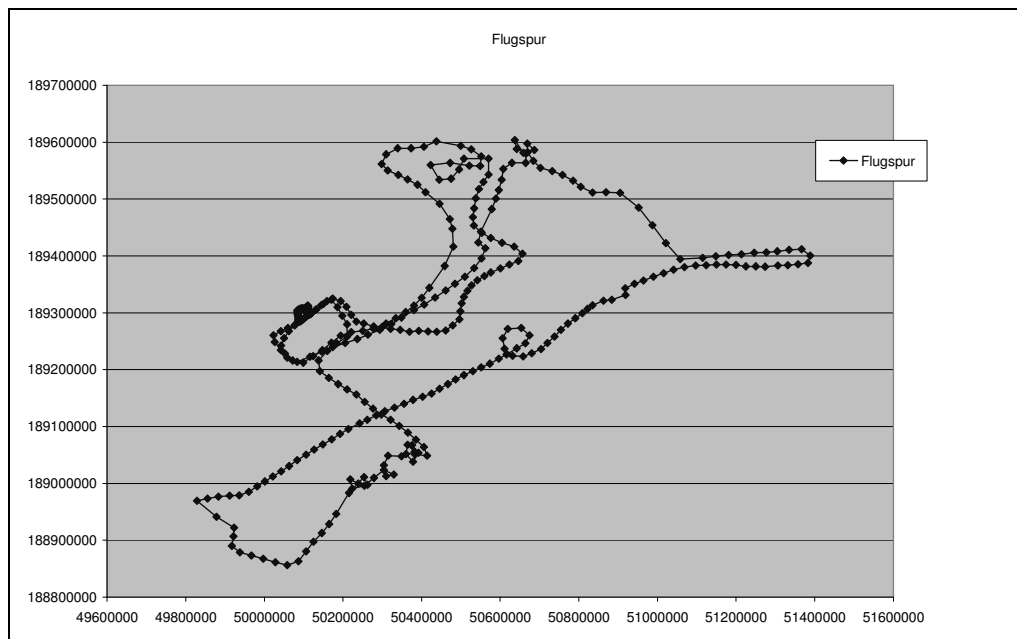


Example: Cartographic Evaluation of flight route using card material



Document No.:	Issue:	Supersedes Issue:	Date:	Page:
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 6

Example: Flight Track Evaluation



INTEGRATION OF THE KAPI SYSTEM INTO THE AQUILA AT01

The KAPI Air Control FDR 07 Data Logger System consists of the following components:

- KAPI K-Box
- KAPI Airspeed Sensor
- KAPI g-Sensor
- KAPI GPS-/GSM-Antenna

For the acquisition of the data to be recorded, the processing unit of the KAPI System uses both, the access to data signals of already existing sensors in the aircraft (engine parameters) as well as its own sensors that have to be additionally installed together with the KAPI System (Airspeed Sensor, G-Sensor, GPS/GSM-Antenna). Whilst the engine parameters are directly derived from the signals of the probes located in the engine, the airspeed (IAS) is determined by the Airspeed Sensor, which is connected to the pitot pressure system of the aircraft, and the vertical acceleration by the g-Sensor. Position, Course, Groundspeed and Flight Altitude are determined from received GPS-signals.

All components of the KAPI Air Control FDR 07 Data Logger System are installed on support brackets inside of the instrument panel of the AQUILA AT01 and are integrated into the on-board electrical system of the aircraft via 1 A-fuses. The Airspeed Sensor is additionally integrated into the pitot pressure system of the aircraft.

For a detailed description of the integration of the KAPI Air Control FDR 07 System into the aircraft, refer to the effective revision of the Maintenance Manual of the AQUILA AT01, document no. MM-AT01-1020-100, chapter 34-60-00.

<i>Document No.:</i>	<i>Issue:</i>	<i>Supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 7

8. HANDLING, SERVICE AND MAINTENANCE

No change to the basic Airplane Flight Manual.

<i>Document No.:</i>	<i>Issue:</i>	<i>Supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-100E	A.11	--- (First Issue)	30/11/2007	AVE19 - 8