FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE
Maison du Sport International Avenue de Rhodanie 54 CH-1007 Lausanne Switzerland
Tel: +41(0)21/345.10.70; Fax: +41(0)21/345.10.77; sec@fai.org

FAI AEROMODELLING COMMISSION (CIAM)
ELECTRONIC DEVICES IN COMPETITIONS WORKING GROUP (EDIC-WG)

References:
FAI web site: www.fai.org
CIAM website: www.fai.org/aeromodelling

To: CIAM web site under AMRT Approvals
CIAM Technical Secretary
F3 Sub Committee

Copy: Manufacturer Concerned

Date: 20 March 2023

CIAM APPROVAL FOR F3G ALTIMETER/MOTOR RUN TIMER/ENERGY (AMRTE)

Approval Reference:	**ATS001**
Manufacturer:	**Aerobtec Manufacturer**
Contact:	**info@aerobtec.com**
Device Names:	**Altis v4+, Altis Power Sensor, ARBox**

This document gives formal approval from the above date for the ATS equipment described below to be used for competitions under the Sporting Code Section 4:Aeromodelling – Class F3G – RC MULTI-TASK GLIDERS WITH ELECTRIC MOTOR.

(i) This document is the initial approval for this type of AMRTE and only applies to the functions relevant to the F3G competition class rules.

(ii) Tests undertaken by EDIC-WG (or such representative as it may appoint), are specifically concerned with the functions relevant to the F3G competition class rules. Other functions of the equipment are not part of this approval and the relevance of this document does not extend beyond the specific validation and certification purposes mentioned above.

(iii) This document does not constitute a guarantee of compatibility of the device listed above with any associated devices with which it may be interconnected.

(iv) This document does not constitute any guarantee and/or statement by EDIC-WG, CIAM and/or FAI as to the reliability of the device listed above.

(v) This approval is not concerned with National and other regulations relating to electronic equipment and compliance with such regulations is not the responsibility of the FAI.

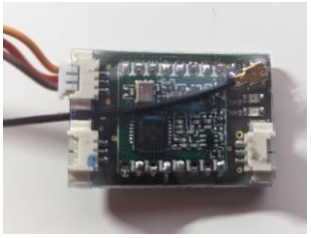
(vi) This approval is not concerned with, and the FAI has no responsibility for, matters related to: (a) intellectual property and intellectual property rights and/or, (b) relations of the manufacturer listed above with any other entities except with FAI and its agents or as they affect the FAI, its agents and this approval.

EQUIPMENT

1 HARDWARE

1.1 Equipment Name

Aerobtec Altis v4+ used with power sensor



ARBox (Acceleration Radio Box) for the integrated Automatic Timing System

1.2 Hardware Version

The Equipment Name defines the Hardware Version.

Only one type of Power Sensor is manufactured by Aerobtec (January 2023). Only this type of Power Sensor in combination with the below mentioned firmware version (ver. 1.1) is compliant.

The ARBox is required to leverage the integrated Automatic Timing System (ATS) in combination with the Altis v4+. Each ARBox has a unique ID to identify the specific model/pilot through the central base station.

1.3 External Features

The ATS module as well as the power sensor are heat shrink encased circuit boards with direct attached cables. Altis V4+ is terminated in 3 pin JR style male and female connectors for connection to the receiver and ESC within a model.

The power sensor is using 2 thick red wires to connect to the ESC+ and BATT+. A black cable is used to sense battery voltage through BATT-.

Both devices are interconnected via a flat ribbon cable between the 3 pin sockets provided.

An on board OLED display provides a readout of the F3G Start Height, F3G Motor Run Time, F3G Start Energy and other data. The OLED is blue or white lettering on a black background.

An USB socket is provided for connection to a personal computer for the purpose of upgrading firmware or viewing logged data. This additional feature does not form part of this approval.

The ARBox (ATS) is a heat shrink encased circuit board with 3 times 3-pin male connectors (MOLEX) and an approx. 18cm antenna to enable the communication to a separate base station. The ARBox is connected to the Altis logger device via a flat ribbon cable provided.

1.4 Pressure Altitude Sensor

The pressure sensor module is manufactured by Bosch Sensortec.

2 FIRMWARE

2.1 Firmware Version

Altis v4+ Altimeter	2.8
Power Sensor	1.1
ARBox (ATS)	0.4

2.2 Pressure to ISA Height Conversion

The firmware uses a polynomial series calculation to perform the pressure to ISA height calculation. This has a demonstrated accuracy consistent with the F3G competition application.

Calibration factors provided by the pressure sensor manufacturer are incorporated in the calculation.

2.3 Temperature Compensation

The firmware incorporates temperature compensation processing in accordance with the pressure sensor manufacturer’s recommendations.

2.4 Dynamic Response

Oversampling of pressure sensor data and subsequent processing does not contribute any significant degradation of dynamic response in the context of the F3G competition application.

2.5 Energy Calculation

The Energy is calculated by the Power Sensor firmware based on measured, calibrated battery voltage and current and transmitted to the Aerobtec Altis V4+ via the serial connection.
The calculation has demonstrated accuracy consistent with the F3G competition application.

2.6 Energy Limiter

The Energy Limit is controlled by the Altis V4+ firmware. The Limiter is triggered when the input signal reaches or exceeds 1200us.

2.7 Acceleration Detection

The ARBox is using a 3-axis acceleration sensor (x-, y- and z-axis) measuring the acceleration in each axis in 0.1 second intervals. The ARBox calculates the SADA (Sum, Acceleration, Differentiated, Absolute) value based on the three differentiated signals eliminating negative values according to the formula: SADA = 0.0981 x (|dx|+|dy|+|dz|) [m/s³]
Stillstand is detected when 20 seamless SADA values are < 4 m/s³.

3 CONDITIONS OF APPROVAL

3.1 This Approval is only applicable to devices of the type described and manufactured to the same production standards as the example evaluated. This Approval is not applicable to any device which has been subject to repair or modification by person(s) other than the original manufacturer or his authorized agent.

3.2 Withdrawal of Approval

If after this Approval has been issued, inconsistencies of performance are found in further examples of the device(s), Approval may be withdrawn upon notice to the manufacturer.

3.3 Changes to F3G Class Rules

If the F3G class rules are amended in any manner that affects the technical specification of the ATS, the validity of this approval will be subject to review.

3.4 Accompanying documents

"EDIC - Homologation Altis V4+ for F3G - V1.0 9Jan23 - FINAL.docx"

3.5 Expiry of Approval

This Approval remains active until it is either superseded or withdrawn. A list of all currently active Approvals can be obtained from the FAI CIAM website.

4 PRODUCTION STATUS

At the date of issue of this approval, the Altis v4+, Power Sensor and ARBox are in current production.

5 MANUFACTURER'S CHANGES

Notification of any changes to hardware and/or firmware must be made by the manufacturer to the Chairman of EDIC-WG so that a decision can be made on any further testing that might be required to maintain CIAM Approval of the AMRTE. This includes changes that are applicable to any additional functions of the device(s) that do not necessarily form part of the F3G requirements.

	
Harald Viehweger Member FAI-CIAM EDIC F3G Working Group email: harald@viehweger.info	Ing Manfred Lex Chairman FAI-CIAM EDIC Working Group Address any queries to: Chairman, FAI-CIAM EDIC Working Group email: ciam-edic@fai.org