



## FÉDÉRATION AÉRONAUTIQUE INTERNATIONALE

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

#### References:

FAI web site: [www.fai.org](http://www.fai.org)  
CIAM website: [www.fai.org/aeromodelling](http://www.fai.org/aeromodelling)

**To:** CIAM web site under AMRT Approvals  
CIAM Technical Secretary  
F5 Sub Committee

**Copy:** Manufacturer Concerned

**Date:** 11 February 2015

#### CIAM APPROVAL FOR F5J ALTIMETER/MOTOR RUN TIMER (AMRT)

**Approval Reference:** AMRT012  
**Manufacturer:** SM Modellbau  
**Manufacturer Contact:** [info@sm-modellbau.de](mailto:info@sm-modellbau.de)  
**Device Name/s:** Unilog 2 UniDisplay

- (i) *This document gives formal approval from the above date for the AMRT equipment described below to be used for competitions under the Sporting Code Section 4: Aeromodelling – Class F5J – Electric Thermal Duration Gliders.*
- (ii) *This document is the initial approval for this type of AMRT and only applies to the functions relevant to the F5J competition class rules.*
- (iii) *Tests undertaken by EDIC-WG (or such representative as it may appoint), are specifically concerned with the functions relevant to the F5J 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.*
- (iv) *This document does not constitute a guarantee of compatibility of the device listed above with any associated devices with which it may be interconnected.*
- (v) *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.*
- (vi) *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.*
- (vii) *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
  - 1.1.1 SM Modellbau Unilog 2
  - 1.1.2 SM Modellbau UniDisplay

## 1.2 Hardware Version

The equipment name defines the hardware version for both the AMRT and the Display. There are two variants of hardware using differing pressure sensor devices. Refer to section 1.4.

## 1.3 External Features

The AMRT module is a heatshrink encased circuit board assembly. A row of 3 pin connectors offer the facility to connect various devices to the device. For AMRT use the Rx and ESC connections are used.

Due an internal opto isolator, a connection is required between Rx and Link to supply power to the internal circuitry.

*Where the device may be subject to verification by competition organisers, the user will be required to have a suitable cable available for connecting to the test equipment and may not wish to remove the cable from the receiver. An additional cable terminated with a JR socket is therefore required.*

For AMRT use, none of the other sensor inputs are utilised. A 4 pin connector is provided for connection of the UniDisplay.

A further 5 pin connector is not utilised for AMRT applications.

A micro SD card is used for logging functions not related to AMRT operation. This also serves as the method by which firmware versions can be updated.

The UniDisplay connects to the AMRT via a 4 way ribbon cable. Four buttons on the UniDisplay perform no function with the F5J firmware.

## 1.4 Pressure Altitude Sensor

A pressure sensor module manufactured by Bosch Sensortec, is fitted to AMRTs with serial numbers xxxxx.0 xxxxx.1 xxxxx.2.

A pressure sensor module manufactured by Measurement Specialities is fitted to AMRTs with serial numbers xxxxx.3.

## **2 FIRMWARE**

### 2.1 Firmware Version

Unilog 2	F0.91	UniDisplay	F1.26
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The firmware incorporates two differing program code routines to enable operation with either of the pressure sensor modules as listed in section 1.4, the appropriate routine being selected automatically.

### 2.2 Pressure to ISA Height Conversion

The firmware uses high precision computation to perform the pressure to ISA height calculation. Calibration factors provided by the pressure sensor manufacturers are incorporated in the calculation.

### 2.3 Temperature Compensation

The firmware incorporates temperature compensation processing in accordance with the pressure sensor manufacturers' recommendations.

## 2.4 Dynamic Response

Oversampling of pressure sensor data and subsequent processing is complies with the requirements specified in Sporting Code Section 4 Vol EDIC

## 3 CONDITIONS OF APPROVAL

- 3.1.1 This Approval is only applicable to devices of the type described and manufactured to the same production standards as the example evaluated.
- 3.1.2 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 authorised agent.
- 3.1.3 The use of an extension cable to permit remote connection of the display unit is permitted subject to the AMRT device being accessible as required by the F5J class rules.

### 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 F5J Class Rules

If the F5J class rules are amended in any manner that affects the technical specification of the AMRT, the validity of this Approval will be subject to review.

### 3.4 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 this Approval, the Unilog 2 and the UniDisplay 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 AMRT. This includes changes that are applicable to any additional functions of the device(s) that do not necessarily form part of the F5J requirements.

*(original signed)*

Eur Ing Paul Newell  
Chairman FAI-CIAM EDIC Working Group

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