

Schedule 28 ATSO-C1007b — flight data recorder interface unit

(subsection 13.2 (1), table, item 8)

1 Application

This Schedule applies to an article manufacturer in relation to a flight data recorder interface unit that will be mounted on an airframe of an aircraft and function as the interface between analogue aircraft systems and digital flight recorders.

2 Definitions

In this Schedule:

ARINC 717-15 means the Aeronautical Radio Inc. ARINC Characteristic 717-15 *Flight Data Acquisition and Recording System*, as existing from time to time.

FDRIU means flight data recorder interface unit.

RTCA/DO-160F means RTCA Document RTCA/DO-160F called *Environmental Conditions and Test Procedures for Airborne Equipment*, or a later version of RTCA Document DO-160, as existing from time to time.

RTCA/DO-178C means RTCA Document RTCA/DO-178C called *Software Considerations in Airborne Systems and Equipment Certification*, as existing from time to time.

RTCA/DO-254 means RTCA Document RTCA/DO-254 called *Design Assurance Guidance for Airborne Electronic Hardware*, as existing from time to time.

3 Minimum performance standard — system requirements

- (1) An FDRIU must process the parameters mentioned in column 1 of items 1 to 6 of the following table.
- (2) An FDRIU may also process the parameters mentioned in column 1 of items 7 to 20 of the table.
- (3) Each parameter that is processed by the FDRIU must meet the following requirements:
 - (a) the range over which the parameter is to be recorded mentioned in column 2 of the table;
 - (b) the accuracy of recording for the parameter mentioned in column 3 of the table;
 - (c) the maximum interval in seconds between recorded readings of the parameter mentioned in column 4 of the table.

FDRIU — parameters, ranges, accuracy and recording intervals

Item	Column 1 Parameter	Column 2 Range	Column 3 Accuracy (minimum recorder and readout)	Column 4 Maximum recording intervals (seconds)
1	Time	See Note	±0.125% per hour	60
2	Altitude	-1 000 ft to maximum certificated altitude of aircraft	± 100 to ± 700 ft	1
3	Airspeed	100 kn IAS to the greater of: (a) 450 kn IAS; or (b) 1.0V _D	±10 kn at room temperature ±12 kn at low temperature	1
4	Vertical acceleration	-3g to +6g	±0.2g stabilised ±10% transient	0.125
5	Heading	360°	±2°	1
6	Press to transmit for each transceiver	On/Off	—	1
7	Pitch attitude	±75°	±2°	1
8	Roll attitude	±180°	±2°	1
9	Thrust of each engine	Full range	±2%	4
10	Flap position	Full range	±3°	2
11	Longitudinal acceleration	±1.0g	+0.02g	0.5
12	Undercarriage squat or tilt switch	On/Off	—	0.5
13	Thrust reverser stowed/deployed (each engine)	On/Off	—	4
14	Leading edge devices stowed/deployed	On/Off	—	2
15	Angle of attack (if sensor fitted)	-20° to +40°	±1°	0.5
16	Lateral acceleration	±1.0g	±0.05g stabilised ±10% transient	0.25
17	Pitch trim	Full range	The greater of ±1° or ±5%	2

FDRIU — parameters, ranges, accuracy and recording intervals

Item	Column 1 Parameter	Column 2 Range	Column 3 Accuracy (minimum recorder and readout)	Column 4 Maximum recording intervals (seconds)
18	Control column or pitch control surface position	Full range	$\pm 2^\circ$	1
19	Control wheel or roll control surface position	Full range	$\pm 2^\circ$	1
20	Rudder pedal or yaw control surface position	Full range	$\pm 2^\circ$	0.5

Note Sufficient time data is required to permit determination of the relationship between recorded information and Universal Coordinated Time.

4 Minimum performance standard — signal characteristic

All parameters of the FDRIU must be sampled, conditioned, and digitised or reformatted in such a manner as to meet ARINC 717-15 standard signal characteristic.

5 Minimum performance standard — failure condition classification minor

The FDRIU must have a design assurance level commensurate with the failure condition classification of “minor”.

Note The concept of failure condition classification is described in the appropriate certification specification guidance material. For example, EASA AMC 25.1309.

6 Minimum performance standard — environmental test

The FDRIU must be tested in accordance with the test conditions mentioned in RTCA/DO-160F.

7 Minimum performance standard — software

Software for the FDRIU must be developed in accordance with RTCA/DO-178C to Level D as defined in section 2.3.3 of RTCA/DO-178C.

8 Minimum performance standard — electronic hardware qualification

The electronic hardware for the FDRIU that is complex as described in section 1.6 of RTCA/DO-254 must be developed in accordance with RTCA/DO-254 to Level D as defined in Table 2-1 of RTCA/DO-254.

9 Minimum performance standard — fire protection

The materials used in the manufacture of the FDRIU, other than small parts that would not contribute significantly to the propagation of fire, must be self-extinguishing in the event of fire and meet the requirements of Category C of section 26 of RTCA/DO-160F.

10 Minimum performance standard — marking

- (1) Subject to subclause (2), each component of the FDRIU must be permanently and legibly marked with the name of the manufacturer and the number “ATSO-C1007b”.
- (2) Subclause (1) does not apply to a component to the extent that the shape, size or nature of the component makes it impracticable to mark on the component the information required by subclause (1).

11 Minimum performance standard — supply of unit

If the article manufacturer of the FDRIU supplies 1 or more FDRIUs to a person, the manufacturer must give the person:

- (a) at least 1 copy of the technical data mentioned in paragraphs 12 (a) to (f); and
- (b) any other data or information necessary for the proper installation, use and continued airworthiness of the FDRIU.

12 Minimum performance standard — technical data

The technical data mentioned in paragraph 21.605 (2) (b) of CASR must include the following:

- (a) the operating instructions and equipment limitations for the FDRIU, including full descriptions of the following:
 - (i) the operational capability of the equipment;
 - (ii) if the applicant requests approval of a deviation from any performance standard mentioned in this Schedule — the operational or installation limitations that would result from that deviation;

- (b) the installation procedures for the FDRIU and limitations, including the following:

- (i) descriptions of the extent to which the FDRIU, when installed according to the installation procedures, will continue to meet the requirements of this Schedule;
- (ii) descriptions of any unique aspects of the installation;
- (iii) as an integral part of the procedures — the following manufacturer’s statement:

The conditions and tests required for ATSO authorisation of this article are minimum performance standards. It is the responsibility of the person installing this article on or within a specific type or class of aircraft to determine that the aircraft installation conditions are within the standards set out in ATSO-C1007b. ATSO articles must have separate authorisation for installation on or within an aircraft.

- (c) schematic drawings for the installation procedures;
- (d) wiring diagrams for the installation procedures;
- (e) equipment specifications;
- (f) a list of the components that make up the FDRIU, including:
 - (i) part numbers referenced to the relevant part; and
 - (ii) if applicable — vendor part number cross-references;

- (g) an installation manual (*IM*), a component maintenance manual (*CMM*) or both an IM and a CMM for the FDRIU that include the following:
 - (i) information about the periodic maintenance, calibration and repair of the installed equipment for its continued airworthiness;
 - (ii) recommended inspection intervals and service life of the installed FDRIU;
 - (iii) details of any CASA approval to deviate from any performance standard in this Schedule;
- (h) technical data for material identification and specifications;
- (i) the functional test specifications to be used to test each FDRIU to ensure its compliance with this Schedule;
- (j) analysis and test results in relation to the FDRIU to substantiate compliance with this Schedule;
- (k) nameplate drawings showing how the FDRIU will be marked in accordance with the requirements mentioned in paragraph 21.607 (1) (c) of CASR and clause 10;
- (l) a list of the drawings and processes, including revision level, necessary to define the design of the FDRIU and its components;
- (m) an Environmental Qualification Form, as mentioned in RTCA/DO-160F, for each component of the FDRIU;
- (n) details of the computer software used in the FDRIU, including the following:
 - (i) if the FDRIU includes a digital computer — a statement of assurance and accompanying evidence that the software has been developed in accordance with RTCA/DO-178C;
 - (ii) a Plan for Software Aspects of Certification mentioned in RTCA/DO-178C;
 - (iii) a Software Configuration Index mentioned in RTCA/DO-178C;
 - (iv) a Software Accomplishment Summary mentioned in RTCA/DO-178C;
- (o) if the FDRIU includes a complex custom micro-coded component:
 - (i) a Plan for Hardware Aspects of Certification mentioned in RTCA/DO-254; and
 - (ii) a hardware verification plan mentioned in RTCA/DO-254; and
 - (iii) a top-level drawing and Hardware Accomplishment Summary mentioned in RTCA/DO-254.