



Designation: F3228 – 21

Standard Specification for Flight Data and Voice Recording in Small Aircraft¹

This standard is issued under the fixed designation F3228; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers international standards for the flight recording aspects of airworthiness and design for “small” aircraft.

1.2 The applicant for a design approval must seek the individual guidance of their respective civil aviation authority (CAA) body concerning the use of this specification as part of a certification plan. For information on which CAA regulatory bodies have accepted this specification (in whole or in part) as a means of compliance to their Small Aircraft Airworthiness regulations (hereinafter referred to as “the Rules”), refer to ASTM F44 webpage (www.ASTM.org/COMMITTEE/F44.htm), which includes CAA website links. **Annex A1** maps the Means of Compliance described in this specification to EASA CS-23, amendment 5, or later, and FAA 14 CFR Part 23, amendment 64, or later.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 Following is a list of external standards referenced throughout this specification; the earliest revision acceptable for use is indicated. In all cases later document revisions are acceptable if shown to be equivalent to the listed revision, or if otherwise formally accepted by the governing civil aviation authority; earlier revisions are not acceptable.

¹ This specification is under the jurisdiction of ASTM Committee F44 on General Aviation Aircraft and is the direct responsibility of Subcommittee F44.50 on Systems and Equipment.

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2.2 ASTM Standards:²

F3060 Terminology for Aircraft

F3061/F3061M Specification for Systems and Equipment in Small Aircraft

F3120/F3120M Specification for Ice Protection for General Aviation Aircraft

F3233/F3233M Specification for Flight and Navigation Instrumentation in Aircraft

2.3 EASA Standard:³

CS-23 Normal, Utility, Aerobatic and Commuter Aeroplanes

2.4 FAA Standard:⁴

14 CFR Part 23 Airworthiness Standards: Normal Category Airplanes

3. Terminology

3.1 Terminology specific to this specification is provided below. For general terminology, refer to Terminology **F3060**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *aircraft type code, n*—an Aircraft Type Code (ATC) is defined by considering both the technical considerations regarding the design of the aircraft and the airworthiness level established based upon risk-based criteria; the method of defining an ATC applicable to this specification is defined in Specification **F3061/F3061M**.

4. Flight Data and Voice Recording

NOTE 1—**Table 1** provides correlation between various Aircraft Type Codes and the individual requirements contained within this section; refer to **3.2.1**. For each subsection, an indicator can be found under each ATC character field; three indicators are used:

An empty cell () in all applicable ATC character field columns indicates that an aircraft must meet the requirements of that subsection.

A white circle (○) in multiple columns indicates that the requirements of that subsection are not applicable to an aircraft *only* if all such ATC character fields are applicable.

A mark-out (×) in any of the applicable ATC character field columns indicates that the requirements of that subsection are not applicable to an aircraft if that ATC character field is applicable.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from European Union Aviation Safety Agency (EASA), Konrad-Adenauer-Ufer 3, D-50668 Cologne, Germany, <https://www.easa.europa.eu>.

⁴ Available from Federal Aviation Administration (FAA), 800 Independence Ave., SW, Washington, DC 20591, <http://www.faa.gov>.

TABLE 1 ATC Compliance Matrix, Section 4

Section	Airworthiness Level				Number of Engines		Type of Engine(s)		Stall Speed			Cruise Speed		Meteorological Conditions			Altitude		Maneuvers	
	1	2	3	4	S	M	R	T	L	M	H	L	H	D	N	I	L	H	N	A
4																				
4.1																				
4.1.1																				
4.1.1.1																				
4.1.1.2																				
4.1.1.3																				
4.1.1.4																				
4.1.1.5																				
4.1.1.6																				
4.1.2																				
4.1.2.1																				
4.1.3																				
4.1.3.1																				
4.1.3.2																				
4.1.3.3																				
4.1.3.4																				
4.1.3.5																				
4.1.3.6																				
4.1.3.7																				
4.1.4																				
4.1.5																				
4.1.6																				
4.1.7																				
4.1.8																				
4.1.9																				
4.1.10																				
4.1.11																				
4.1.12																				
4.1.13																				
4.1.14																				
4.1.15																				
4.1.16																				
4.1.17																				
4.1.18																				
4.1.19																				
4.2																				
4.2.1																				
4.2.1.1																				
4.2.1.2																				
4.2.1.3																				
4.2.1.4																				
4.2.1.5																				
4.2.1.6																				
4.2.1.7																				
4.2.1.8																				
4.2.2																				
4.2.3																				
4.2.4																				
4.2.5																				
4.2.6																				
4.2.7																				
4.2.8																				

Example—An aircraft with an ATC of 1SRLLDLN is being considered. Since all applicable columns are empty for 4.1.1, that subsection is applicable to the aircraft.

4.1 Cockpit Voice Recorders:

4.1.1 Each cockpit voice recorder required by the operating rules of the governing civil aviation authority must be approved and must be installed so that the requirements of 4.1.1.1 – 4.1.1.6 are met.

4.1.1.1 The device must record voice communications transmitted from or received in the aircraft by radio.

4.1.1.2 The device must record ambient voice communications of flight crew members on the flight deck.

4.1.1.3 The device must record voice communications of flight crew members on the flight deck, using the aircraft's interphone system.

4.1.1.4 The device must record voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.

4.1.1.5 The device must record voice communications of flight crew members using the passenger loudspeaker system, if there is such a system and if the fourth channel is available in accordance with the requirements of 4.1.3.5.

4.1.1.6 If Controller-Pilot-Data-Link-Communications (CP-DLC) equipment is installed, the device must record all