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.

Designation: F3231/F3231M – 17

Standard Specification for Electrical Systems in Small Aircraft[1]

This standard is issued under the fixed designation F3231/F3231M; 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 electrical systems aspects of airworthiness and design for "small" aircraft.

1.2 The applicant for a design approval must seek the individual guidance of their respective 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.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

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.

2.2 *ASTM Standards:*[2]

F3060 Terminology for Aircraft

F3061/F3061M Specification for Systems and Equipment in Small Aircraft

F3066/F3066M Specification for Powerplant Systems Specific Hazard Mitigation

F3117/F3117M Specification for Crew Interface in Aircraft

F3235 Specification for Electrical Storage Batteries in Small Aircraft

2.3 *FAA Standard:*

DOT/FAA/AR-00/12 Aircraft Materials Fire Test Handbook[3]

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.

3.2.2 *continued safe flight and landing, n*—continued safe flight and landing as applicable to this specification is defined in Specification F3061/F3061M.

4. Electrical Systems

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.

Example—An aircraft with an ATC of 1SRLLDLN is being considered. Since all applicable columns are empty for 4.2.1, that subsection is applicable to the aircraft. Since both the "L" stall speed column and the "D" meteorological column for 4.1.1 contain white circles, then that subsection is not applicable; however, for an aircraft with an ATC of

[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] 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 Federal Aviation Administration (FAA), 800 Independence Ave., SW, Washington, DC 20591, http://www.faa.gov.

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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									○					○						
4.2																				
4.2.1																				
4.2.1.1				×																
4.2.1.2	×	×	×																	
4.2.2																				
4.2.3																				
4.2.4																				
4.2.5																				
4.2.6																				
4.2.7	×	×	×																	
4.2.8	×	×	×																	
4.2.9	×	×	×																	
4.2.10	×	×	×																	
4.2.11	×	×	×																	
4.2.12																				
4.2.12.1																				
4.2.12.2																				
4.2.12.3																				
4.2.12.4																				
4.2.12.5																				
4.2.12.6																				
4.2.12.7																				
4.2.13																				
4.2.13.1																				
4.2.13.2	×	×	×																	
4.2.14																				
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4.2.16																				
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4.2.17.1									○					○						
4.2.17.2									○					○						
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