Irish Standard
I.S. EN 60952-1:2013

Aircraft batteries -- Part 1: General test requirements and performance levels (IEC 60952-1:2013 (EQV))

I.S. EN 60952-1:2013

Incorporating amendments/corrigenda issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

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English version

Aircraft batteries - Part 1: General test requirements and performance levels

(IEC 60952-1:2013)

Batteries d'aéronefs - Partie 1: Exigences générales d'essais et niveaux de performances (CEI 60952-1:2013)

Flugzeugbatterien - Teil 1: Allgemeine Prüfverfahren und Leistungsmerkmale (IEC 60952-1:2013)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 60952-1:2013 E

Foreword

The text of document 21/803/FDIS, future edition 3 of IEC 60952-1, prepared by IEC/TC 21 "Secondary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60952-1:2013.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2014-05-13
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2016-08-13

This document supersedes EN 60952-1:2004.

EN 60952-1:2013 includes the following significant technical changes with respect to EN 60952-1:2004:

Additional test requirements to meet the needs of the regulatory airworthiness authorities for both product performance and qualification.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 60952-1:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61434	NOTE	Harmonised as EN 61434.
ISO 266:1997	NOTE	Harmonised as EN ISO 266:1997 (not modified).
ISO 9000:2005	NOTE	Harmonised as EN ISO 9000:2005 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60051-1	-	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 1: Definitions and general requirements common to all parts	EN 60051-1	-
IEC 60051-2	-	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 2: Special requirements for ammeters and voltmeters	EN 60051-2	-
IEC 60485	-	Digital electronic d.c. voltmeters and d.c. electronic analogue-to-digital converters	-	-
IEC 60952-2	2013	Aircraft batteries - Part 2: Design and construction requirements	EN 60952-2	2013
IEC 60952-3	2013	Aircraft batteries - Part 3: Product specification and declaration of design and performance (DDP)	EN 60952-3	2013
ISO 2859	Series	Sampling procedures for inspection by attributes	-	-
ISO 7137	-	Aircraft - Environmental conditions and test procedures for airborne equipment	-	-
RTCA DO-160	2010	Environmental Conditions and Test Procedures for Airborne Equipment	-	-
SAE AIR 1377A-80	-	Aerospace Information Report - Fire Test Equipment for Flexible Hose and Tube Assemblies	-	-
SAE AS 1055B	1978	Aerospace Standard - Fire Testing of Flexible hose, Tube Assemblies, Coils, Fittings and Similar System Components	-	-
U.S Federal Test Method, Standard N°191A/Federal Test Method 5906	1978	Flammability (Horizontal Test)	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

AIRCRAFT BATTERIES –

Part 1: General test requirements and performance levels

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60952-1 has been prepared by IEC technical committee 21: Secondary cells and batteries.

This third edition cancels and replaces the second edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: additional test requirements to meet the needs of the regulatory airworthiness authorities for both product performance and qualification.

The text of this standard is based on the following documents:

FDIS	Report on voting
21/803/FDIS	21/814/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all the parts in the IEC 60952 series, published under the general title *Aircraft batteries* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The IEC 60952 series defines minimum environmental and performance requirements for establishing a qualification standard for airworthiness of lead-acid and nickel-cadmium aircraft batteries, which contain corrosive electrolytes.

The series defines test procedures for determining battery performance. The electrical test results may be used to establish airworthiness in a particular application. For all tests, the manufacturer declares the minimum performance for each battery type.

The requirements of IEC 60952 for aircraft batteries are divided into three parts:

– Part 1 defines test procedures for the evaluation, comparison and qualification of batteries and states minimum environmental performance levels for airworthiness.
– Part 2 defines the design requirements for aircraft batteries as well as their format (shape and size) and the range of aircraft interface connectors that are used.
– Part 3 defines the product specification which is used to define specific requirements for an application and a declaration of design and performance (DDP), which details the performance of a battery format when tested to Part 1.

AIRCRAFT BATTERIES –

Part 1: General test requirements and performance levels

1 Scope

This part of the IEC 60952 series defines test procedures for the evaluation, comparison and qualification of batteries and states minimum performance and environmental levels for airworthiness. Where specific tests are defined with no pass/fail requirement (to establish performance capability), the manufacturer's declared values, from qualification testing, will be used to establish minimum requirements for ongoing maintenance of approval for that design of battery.

To provide representative examples, this standard utilises voltage and current values based upon an aircraft electrical system nominally rated at 28 V d.c. Additionally, the nominal values for cell voltage are assumed to be 1,2 V per cell for nickel-cadmium batteries and 2,0 V per cell for lead-acid batteries.

The specific topics addressed in this part of IEC 60952 serve to establish acceptable quality standards required to qualify a battery as airworthy.

In cases where the requirements for a specific application exceed those detailed in this standard, the purchaser will detail said requirements in the product specification and the method of establishing compliance.

It is recognised that additional data may be required by other organisations (national standards bodies, AECMA, SAE etc.). The present standard can be used as a framework to devise tests for generation of the required data.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60051-1, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 1: Definitions and general requirements common to all parts*

IEC 60051-2, *Direct acting indicating analogue electrical measuring instruments and their accessories – Part 2: Special requirements for ammeters and voltmeters*

IEC 60485, *Digital electronic d.c. voltmeters and d.c. electronic analogue-to-digital convertors*[1]

IEC 60952-2:2013, *Aircraft batteries – Part 2: Design and construction requirements*

IEC 60952-3:2013, *Aircraft batteries – Part 3: Product specification and declaration of design and performance (DDP)*[2]

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[1] Withdrawn.

[2] The first edition (1993) was published under the title *Aircraft batteries – Part 3*: *External electric connectors*