SLOVENSKI STANDARD
SIST EN IEC 62928:2018

01-junij-2018

Železniške naprave - Oprema voznih sredstev - Vgrajene litij-ionske vlečne baterije

Railway applications - Rolling stock equipment - Onboard lithium-ion traction batteries

Ta slovenski standard je istoveten z: **EN IEC 62928:2018**

ICS:

29.220.99	Drugi členi in baterije	Other cells and batteries
29.280	Električna vlečna oprema	Electric traction equipment

SIST EN IEC 62928:2018 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN IEC 62928

April 2018

ICS 45.060.01

English Version

Railway applications - Rolling stock - Onboard lithium-ion traction batteries (IEC 62928:2017)

Applications ferroviaires - Matériel roulant - Batteries d'accumulateurs de traction embarquées au lithium-ion (IEC 62928:2017)

Bahnanwendungen - Betriebsmittel auf Bahnfahrzeugen - Lithium-Ionen-Traktionsbatterien auf Bahnfahrzeugen (IEC 62928:2017)

This European Standard was approved by CENELEC on 2018-01-11. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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: Rue de la Science 23, B-1040 Brussels

Ref. No. EN IEC 62928:2018 E

European foreword

The text of document 9/2317/FDIS, future edition 1 of IEC 62928, prepared by IEC/TC 9 "Electrical equipment and systems for railways" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62928:2018.

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 — 2018-10-13
- latest date by which the national standards conflicting with the document have to be withdrawn — 2021-04-13

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

Endorsement notice

The text of the International Standard IEC 62928:2017 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 60077-2	NOTE	Harmonized as EN 60077-2.
IEC 60721-3-2	NOTE	Harmonized as EN 60721-3-2.
IEC 61287-1	NOTE	Harmonized as EN 61287-1.
IEC 61377:2016	NOTE	Harmonized as EN 61377:2016 (not modified).
IEC 61434	NOTE	Harmonized as EN 61434.
IEC 62133 Series	NOTE	Harmonized as EN 62133 Series.
IEC 62485-3	NOTE	Harmonized as EN 62485-3.
ISO 13849-1	NOTE	Harmonized as EN ISO 13849-1.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60050-482	2004	International Electrotechnical Vocabulary - Part 482: Primary and secondary cells and batteries	-	-
IEC 60050-811	2017	International Electrotechnical Vocabulary - Chapter 811: Electric traction	-	-
IEC 60051	series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	series
IEC 60077-1	-	Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules	EN 60077-1	-
IEC 60077-5	-	Railway applications - Electric equipment for rolling stock - Part 5: Electrotechnical components - Rules for HV fuses	EN 60077-5	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60571	-	Railway applications - Electronic equipment used on rolling stock	-	-
IEC 60850	-	Railway applications - Supply voltages of traction systems	-	-
IEC 61373	-	Railway applications - Rolling stock equipment - Shock and vibration tests	EN 61373	-
IEC 61991	-	Railway applications - Rolling stock - Protective provisions against electrical hazards	-	-
IEC 62236-3-2	-	Railway applications - Electromagnetic compatibility - Part 3-2: Rolling stock - Apparatus	-	-
IEC 62278	2002	Railway applications - Specification and demonstration of reliability, availability, maintainability and safety (RAMS)	-	-
IEC 62279	-	Railway applications - Communications, signalling and processing systems - Software for railway control and protection systems	-	-

Publication	Year	Title	EN/HD	Year
IEC 62497-1	-	Railway applications - Insulation coordination - Part 1: Basic requirements - Clearances and creepage distances for all electrical and electronic equipment	-	-
IEC 62498-1	2010	Railway applications - Environmental conditions for equipment - Part 1: Equipment on board rolling stock	-	-
IEC 62619	2017	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications	EN 62619	2017
IEC 62620	2014	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for use in industrial applications	EN 62620	2015
IEC 62864-1	2016	Railway applications - Rolling stock - Power supply with onboard energy storage system - Part 1: Series hybrid system	EN 62864-1	2016
ISO 7010	-	Graphical symbols - Safety colours and safety signs - Registered safety signs	EN ISO 7010	-
ISO/IEC Guide 51	2014	Safety aspects - Guidelines for their inclusion in standards	-	-

IEC 62928

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

Railway applications – Rolling stock – Onboard lithium-ion traction batteries

Applications ferroviaires – Matériel roulant – Batteries d'accumulateurs de traction embarquées au lithium-ion

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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RAILWAY APPLICATIONS – ROLLING STOCK – ONBOARD LITHIUM-ION TRACTION BATTERIES

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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8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62928 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

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

FDIS	Report on voting
9/2317/FDIS	9/2329/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.

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

In the 90s the market started developing mainly portable lithium technology batteries. Existing standards for lithium-ion batteries currently focus on small portable batteries:

- IEC 61960-3:2017, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications – Part 3: Prismatic and cylindrical lithium secondary cells and batteries made from them
- IEC 62133 (all parts): Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications.

These above mentioned documents do not cover large cells and batteries for industrial and railway applications, which are non-portable and weigh hundreds of kilograms.

TC 21 and SC 21A decided to start work on large capacity lithium cells and batteries:

- IEC 62619:2017, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries for use in industrial applications,
- IEC 62620:2014, Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for use in industrial applications.

The documents are often generic and mention railway applications only as an example.

Therefore, this document is developed for specifying the requirements for railway traction applications.

In addition, TC 9 has developed the following document:

- IEC 62864-1:2016, Railway applications – Rolling stock – Power supply with onboard energy storage system – Part 1: Series hybrid system

IEC 62864-1:2016 specifies the general requirements for the onboard energy storage system as a system level. The hierarchy of standards is shown in Figure 1 of IEC 62864-1:2016.

It is part of a series of standards, referring to each other. The hierarchy of the standards used in the railway specific area related to IEC 62928 is as follows:

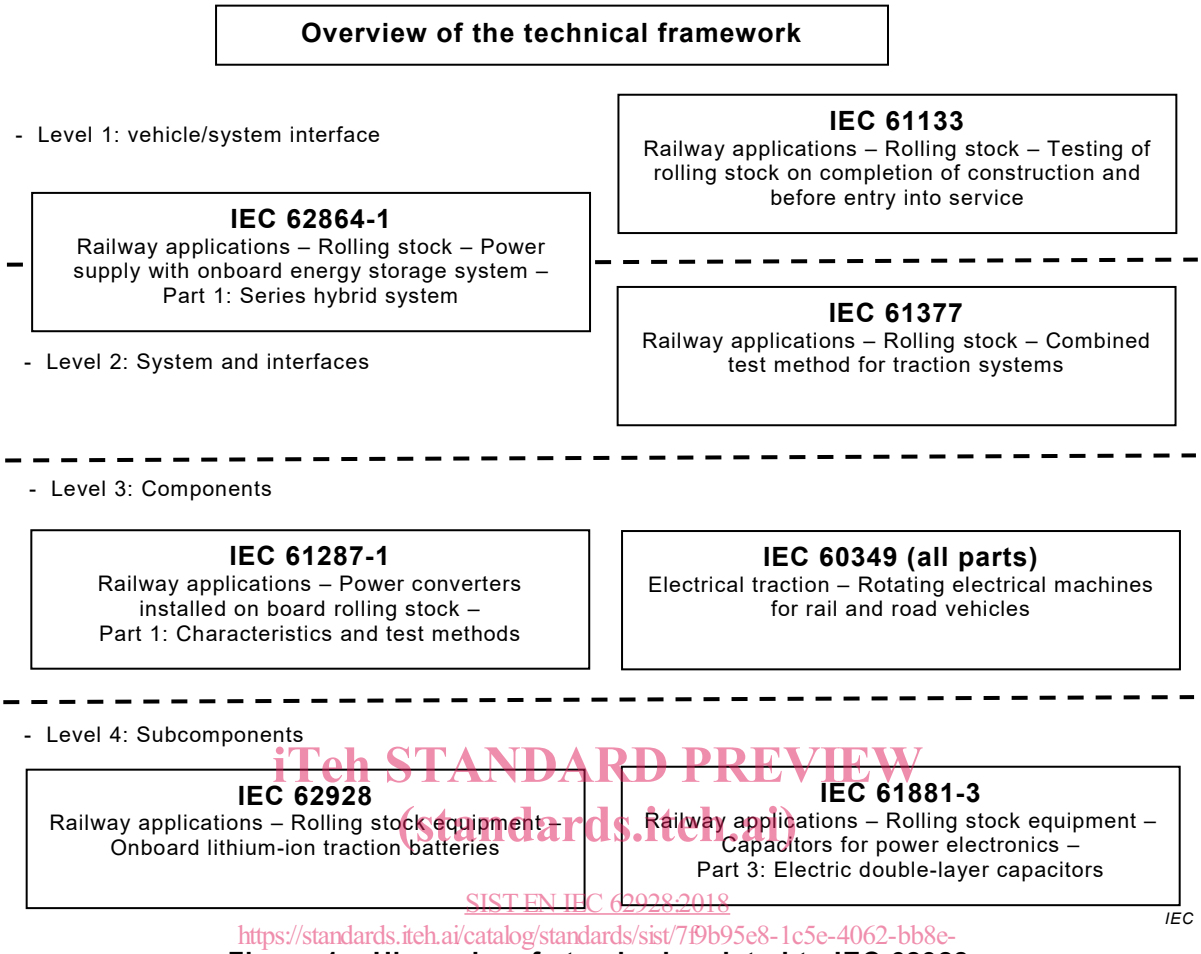

Figure 1 – Hierarchy of standards related to IEC 62928

The standards listed in Figure 1 are not exhaustive.

RAILWAY APPLICATIONS – ROLLING STOCK – ONBOARD LITHIUM-ION TRACTION BATTERIES

1 Scope

This document applies to onboard lithium-ion traction batteries for railway applications.

This document specifies the design, operation parameters, safety recommendations, data exchange, routine and type tests, as well as marking and designation.

Battery systems described in this document are used for the energy storage system (ESS) for the traction power of railway vehicles such as hybrid vehicles as defined in IEC 62864-1:2016. Auxiliary batteries to supply power only to the auxiliary equipment are excluded.

Subcomponents within the battery systems, e.g. battery management system (BMS) and battery thermal management system (BTMS), are also covered in this document.

Power conversion equipment (e.g. chopper, converter, etc.), inductors, capacitors and switchgear are excluded from the scope of this document.

General requirements for onboard ESS are described in IEC 62864-1:2016.

This document specifies the lithium-ion battery technology but does not prevent the use of battery technologies other than lithium-ion technology for application as traction batteries.

A hybrid energy storage system, which uses two or more energy storage technologies combined, e.g. a traction battery and double layer capacitors, is not covered in this document. However, if different technologies of energy storage systems are used on the same railway vehicle and managed independently, each independent energy storage system is covered by its own document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050-482:2004, *International Electrotechnical Vocabulary – Part 482: Primary and secondary cells and batteries*

IEC 60050-811:2017, *International Electrotechnical Vocabulary – Chapter 811: Electric traction*

IEC 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

IEC 60077-1, *Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules*

IEC 60077-5, *Railway applications – Electric equipment for rolling stock – Part 5: Electrotechnical components – Rules for HV fuses*