SVENSK STANDARD SS-EN IEC 62485-6

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-03-17	1	1 (1+25)	SEK TK 21

Laddningsbara batterier och batterianläggningar – Säkerhet – Del 6: Skötsel av litium-jonbatterier i traktionstillämpningar

Safety requirements for secondary batteries and battery installations – Part 6: Safe operation of lithium-ion batteries in traction applications

Som svensk standard gäller europastandarden EN IEC 62485-6:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62485-6:2021.

Nationellt förord

Europastandarden EN IEC 62485-6:2021

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62485-6, First edition, 2021 - Safety requirements for secondary batteries and battery installations - Part 6: Safe operation of lithium-ion batteries in traction applications**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 29.220.20; 29.220.30

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62485-6

February 2021

ICS 29.220.20; 29.220.30

English Version

Safety requirements for secondary batteries and battery installations - Part 6: Safe operation of lithium-ion batteries in traction applications (IEC 62485-6:2021)

Exigences de sécurité pour les batteries d'accumulateurs et les installations de batteries - Partie 6: Fonctionnement en toute sécurité des batteries ions-lithium dans les applications de traction (IEC 62485-6:2021)

Sicherheitsanforderungen an sekundäre Batterien und Batterieanlagen – Teil 6: Sicherer Betrieb von Lithium-Ionen-Batterien in Traktionsanwendungen (IEC 62485-6:2021)

This European Standard was approved by CENELEC on 2021-02-09. 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.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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 62485-6:2021 E

European foreword

The text of document 21/1071/FDIS, future edition 1 of IEC 62485-6:2021, prepared by IEC/TC 21 "Secondary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62485-6:2021.

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) 2021-11-09
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-02-09

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 62485-6:2021 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 60664 (series)	NOTE	Harmonized as EN 60664 (series)
IEC 60730-1:2013	NOTE	Harmonized as EN 60730-1:2016 (modified)
IEC 60730-1:2013/A1:2015	NOTE	Harmonized as EN 60730-1:2016/A1:2019 (not modified)
IEC 60730-1:2013/A2:2020	NOTE	Harmonized as EN 60730-1:2016/A2:—[1] (not modified)
IEC 60812	NOTE	Harmonized as EN IEC 60812
IEC 60900	NOTE	Harmonized as EN IEC 60900
IEC 61025	NOTE	Harmonized as EN 61025
IEC 61429	NOTE	Harmonized as EN 61429
IEC 61508-1	NOTE	Harmonized as EN 61508-1
IEC 62281	NOTE	Harmonized as EN IEC 62281
IEC 62485-1	NOTE	Harmonized as EN IEC 62485-1
IEC 62485-3:2014	NOTE	Harmonized as EN 62485-3:2014 (not modified)
IEC 62902	NOTE	Harmonized as EN IEC 62902
IEC 62928	NOTE	Harmonized as EN IEC 62928
IEC 62660 (series)	NOTE	Harmonized as EN 62660 (series)

[1] To be published. Stage at the time of publication: EN 60730-1:2016/FprA2:2020.

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 60204-1	-	Safety of machinery - Electrical equipment of machines - Part 1: General requirements	EN 60204-1	-
IEC 60364-4-41	2005	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41	2017
+A1	2017		+ A11	2017
-	-		+ A12	2019
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 61000-1-2	-	Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena	EN 61000-1-2	-
IEC 61000-6-1	-	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments	EN IEC 61000-6-1	-
IEC 61000-6-2	-	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments	EN IEC 61000-6-2	-
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments	EN IEC 61000-6-3[2]	-

[2] To be published. Stage at the time of publication: prEN IEC 61000-6-3:2019.

IEC 61000-6-4	-	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments	EN IEC 61000-6-4	-
IEC 61000-6-7	-	Electromagnetic compatibility (EMC) - Part 6-7: Generic standards - Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations	EN 61000-6-7	-
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	-
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
ISO 3864	series	Graphical symbols - Safety colours and safety signs	-	-
-	-	Safety of industrial trucks - Electrical requirements - Part 1: General requirements for battery powered trucks	EN 1175-1	1998
			+A1	2010

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY REQUIREMENTS FOR SECONDARY BATTERIES AND BATTERY INSTALLATIONS –

Part 6: Safe operation of lithium ion batteries in traction applications

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 62485-6 has been prepared by IEC technical committee 21: Secondary cells and batteries.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
21/1071/FDIS	21/1077/RVD

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

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

A list of all parts in the IEC 62485 series, published under the general title *Safety requirements for secondary batteries and battery installations*, can be found on the IEC website.

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

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

SAFETY REQUIREMENTS FOR SECONDARY BATTERIES AND BATTERY INSTALLATIONS –

Part 6: Safe operation of lithium ion batteries in traction applications

1 Scope

This part of IEC 62485 applies to battery installations used for electric off-road vehicles; it does not cover the design of such vehicles.

Examples of the main applications are:

– industrial
  - cleaning machines,
  - trucks for material handling, for example, lift trucks, tow trucks, automatic guided vehicles,
  - electrically propulsed lifting platforms;
– other applications
  - electric powered boats and ships.

This document covers the safety aspects of battery installations in such applications. This document does not cover railway vehicles, for traction railway application, see IEC 62928.

This document does not cover batteries and battery installations for the propulsion of electric road vehicles. In the event of there being a variation of requirements between this document and those of a relevant product standard (e.g. goods vehicles, bicycles, wheel chairs, golf carts), then the product standard requirements take precedence.

Lithium ion cells and batteries used in traction industrial application are intended to fulfil safety requirements in accordance with IEC 62619.

The maximum voltages are limited to AC 1 000 V and to DC 1 500 V, and the principal measures for protection against hazards, generally from electricity, gas emission and electrolyte to prevent fire and explosion are described.

This document provides requirements on safety aspects associated with the installation, use, inspection, maintenance and disposal of lithium ion batteries. Batteries containing lithium metal are not covered by this document.

In general, the safety requirements for secondary batteries and battery installations – General safety information and definitions are specified for lead-acid, nickel-cadmium and nickel-metal hybrid batteries in accordance with IEC 62485-1.

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 60204-1, *Safety of machinery – Electrical equipment of machines – Part 1: General requirements*

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*
IEC 60364-4-41:2005/AMD1:2017

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 61000-1-2, *Electromagnetic compatibility (EMC) – Part 1-2: General – Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena*

IEC 61000-6-1, *Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity standard for residential, commercial and light-industrial environments*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity standard for industrial environments*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61000-6-4, *Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emission standard for industrial environments*

IEC 61000-6-7, *Electromagnetic compatibility (EMC) – Part 6-7: Generic standards – Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations*

IEC 61140, *Protection against electric shock – Common aspects for installation and equipment*

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*

ISO 3864 (all parts), *Graphical symbols – Safety colours and safety signs*

EN 1175-1:2011, *Safety of industrial trucks – Electrical requirements – Part 1: General requirements for battery powered trucks*

UN Regulation No. 100 (UN R 100):2011, *Uniform provisions concerning the approval of vehicles with regard to specific requirements for the electric power train*