SVENSK STANDARD SS-EN IEC 62485-5

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-09-22	1	1 (33+41)	SEK TK 21

Laddningsbara batterier och batterianläggningar – Säkerhet – Del 5: Skötsel av batterianläggningar med litium-jonbatterier

Safety requirements for secondary batteries and battery installations – Part 5: Safe operation of stationary lithium-ion batteries

Som svensk standard gäller europastandarden EN IEC 62485-5:2021. Den svenska standarden innehåller de officiella svenska och engelska språkversionerna av EN IEC 62485-5:2021.

Nationellt förord

Europastandarden EN IEC 62485-5:2021

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62485-5, First edition, 2020 - Safety requirements for secondary batteries and battery installations - Part 5: Safe operation of stationary lithium-ion batteries**

utarbetad inom International Electrotechnical Commission, IEC.

Vid skillnader i tolkning har den engelskspråkiga versionen företräde.

ICS 29.220.20; 29.220.30

Denna standard är fastställd av, SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1284, 164 29 KISTA
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Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPASTANDARD **EN IEC 62485-5**
EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM **Januari 2021**

ICS 29.220.20; 29.220.30

Svensk språkversion

Laddningsbara batterier och batterianläggningar – Säkerhet – Del 5: Stationära litium-jonbatterier

(IEC 62485-5:2020)

Exigences de sécurité pour les batteries d'accumulateurs et les installations de batteries – Partie 5: Foncionnement en toute sécurité des batteries ions-lithium stationnaires (IEC 62485-5:2020)

Safety requirements for secondary batteries and battery installations – Part 5: Safe operation of stationary lithium-ion batteries (IEC 62485-5:2020)

Sicherhetisanforderungenan sekundäre Batterien und Batterianlagen – Teil 5: Sicherer Betrieb von stationären Lithium-Ionen-Batterien (IEC 62485-5:2020)

Denna svenska standard utgör den svenska språkversionen av europastandarden EN IEC 62485-5. Den har översatts av SEK Svensk Elstandard. Europastandarden antogs av CENELEC 2020-12-30. CENELEC-medlemmarna är förpliktigade att följa fordringarna i CEN/CENELECs Internal Regulations som anger på vilka villkor europastandarden i oförändrat skick ska ges status som nationell standard.

Aktuella förteckningar och bibliografiska referenser som upplyser om nationella standarder kan på begäran erhållas från CENELECs centralsekretariat eller från någon av CENELECs medlemmar.

Europastandarden finns i tre officiella versioner (engelsk, fransk och tysk). En version på något annat språk, översatt under ansvar av en CENELEC-medlem till sitt eget språk och anmäld till CENELECs centralsekretariat, har samma status som de officiella språkversionerna.

CENELECs medlemmar är nationalkommittéerna i Belgien, Bulgarien, Cypern, Danmark, Estland, Finland, Frankrike, Grekland, Irland, Island, Italien, Kroatien, Lettland, Litauen, Luxemburg, Nordmakedonien, Malta, Nederländerna, Norge, Polen, Portugal, Rumänien, Schweiz, Serbien, Slovakien, Slovenien, Spanien, Storbritannien, Sverige, Tjeckien, Turkiet, Tyskland, Ungern och Österrike.

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. Nr. EN IEC 62485-5:2021 Sv

Förord

Texten i dokumentet 21/1069/FDIS, kommande första utgåva av IEC 62485-5, utarbetad av IEC TC 21, Secondary cells and batteries, var föremål för parallell röstning i IEC och CENELEC och har fastställts i CENELEC som EN IEC 62485-5:2021.

Följande datum fastställdes:

– senaste datum för överföring av EN till nationell nivå genom utgivning av motsvarande nationell standard eller genom ikraftsättning	(dop)	2021-09-30
– senaste datum för upphävande av motstridig nationell standard	(dow)	2023-12-30

Lägg märke till att vissa delar av detta dokument kan omfattas av patenträttigheter. CEN och CENELEC kan inte ansvara för att sådana patenträttigheter identifieras.

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Ikraftsättningsmeddelande

Texten i den internationella standarden IEC 62485-5:2020 har av CENELEC fastställts som europastandard utan några ändringar.

I bibliografin ska följande anmärkningar läggas till för de angivna standarderna:

IEC 60065	ANM – Harmoniserad som EN 60065
IEC 60079-10-1	ANM – Harmoniserad som EN 60079-10-1
IEC 60364-1	ANM – Harmoniserad som HD 60364-1
IEC 60364-4-42	ANM – Harmoniserad som HD 60364-4-42
IEC 60364-5-54	ANM – Harmoniserad som HD 60364-5-54
IEC 606364-7-706	ANM – Harmoniserad som HD 60364-7-706
IEC 60695-11-20	ANM – Harmoniserad som EN 60695-11-20
IEC 60695-11-10	ANM – Harmoniserad som EN 60695-11-10
IEC 60900	ANM – Harmoniserad som EN 60900
IEC 60950-1	ANM – Harmoniserad som EN 60950-1
IEC 60990	ANM – Harmoniserad som EN 60990
IEC 61000-4-2	ANM – Harmoniserad som EN 61000-4-2
IEC 61000-6-5	ANM – Harmoniserad som EN 61000-6-5
ISO 9773	ANM – Harmoniserad som EN ISO 9773

Bilaga ZA
(normativ)

Hänvisning till internationella publikationer med angivna europeiska motsvarigheter

Följande publikationer är nödvändiga vid tillämpningen av denna standard. Beträffande hänvisningar till publikationer gäller den utgåva som anges nedan. Vid odaterade hänvisningar gäller den senaste utgåvan av publikationen (inklusive eventuella ändringar och tillägg).

ANM 1 – När de internationella publikationerna har ändrats genom gemensamma europeiska avvikelser (CENELEC common modifications) angivna med (ändrad), gäller motsvarande EN eller HD.

ANM 2 – Aktuell information om de senaste utgåvorna av de europeiska standarder som listas i denna bilaga finns på: www.cenelec.eu

Publikation	År	Titel	EN/HD	År
IEC 60050-482	-	International Electrotechnical Vocabulary – Part 482: Primary and secondary cells and batteries	-	-
IEC 60364-4-41 (ändrad)	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 60364-4-43	-	IEC 60364-4-43 Ed. 4: Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent	-	-
IEC 60364-5-53	-	Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Protection, isolation, switching, control and monitoring	-	-
IEC 60364-5-54	-	Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors	-	-
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems – Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 60755	-	General safety requirements for residual current operated protective devices	-	-
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	-

Publikation	År	Titel	EN/HD	År
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for equipment in residential environments	EN IEC 61000-6-3[1]	-
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 IEC 61000-6-7	-
IEC 61140	-	Protection against electric shock - Common aspects for installation and equipment	EN 61140	-
IEC/TR 61340-1	-	Electrostatics – Part 1: Electrostatic phenomena – Principles and measurements	-	-
IEC 61340-5-1	-	Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements	EN 61340-5-1	-
IEC 61660-1	-	Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 1: Calculation of short-circuit currents	EN 61660-1	-
IEC 61660-2	-	Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 2: Calculation of effects	EN 61660-2	-
IEC 62133-2	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications – Part 2: Lithium systems	EN 62133-2	-
IEC 62485-1	-	Safety requirements for secondary batteries and battery installations – Part 1: General safety information	EN IEC 62484-1	-
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/IEC Guide 51	-	Safety aspects – Guidelines for their inclusion in standards	-	-
ISO 3864	Serie	Graphical symbols – Safety colours and safety signs	-	-
ISO 7010	-	Graphical symbols – Safety colours and safety signs - Registered safety signs	-	

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

Innehåll

Inledning

De beskrivna säkerhetsfordringarna omfattar åtgärderna till skydd mot risker som härrör från elektricitet och kemiska ämnen när laddningsbara batterier används. Därutöver beskrivs åtgärder för att upprätthålla den funktionella säkerheten hos batterier och batterianläggningar.

För elsäkerhet (skydd mot elchock) i avsnitt 4, hänvisar denna standard till IEC 60364-4-41[2]. Den vägledande funktionen hos denna standard följs helt och hållet genom hänvisning till aktuella avsnitt där, men tolkningar har gjorts när det krävts anpassning till förhållanden vid likström (DC).

Litium-jonbatterier som används i industriella tillämpningar är avsedda att uppfylla säkerhetsfordringarna i IEC 62619.

1 Omfattning

Denna del av IEC 62485 gäller för installationer med en eller flera stationära laddningsbara batterier med en högsta sammanlagd nominell likspänning av 1500 V likström till någon del av elnätet och beskriver de viktigaste åtgärderna till skydd mot risker vid normal drift, eller de som kan förväntas vid fel, härrörande från:

– elektricitet
– kortslutningar
– elektrolyt
– gasavgivning
– brand
– explosion.

Detta dokument ger fordringar avseende säkerhetsaspekter i samband med installation, användning, inspektion, underhåll och bortskaffande av litium-jonbatterier i stationära tillämpningar.

Standarden omfattar stationära batterier för industriella tillämpningar i separata slutna byggnader eller höljen, liksom i allmänna byggnader och i kontor och bostadshus, samt underhåll och utrangering av litium-jonbatterier i stationära tillämpningar.

Batterier som innehåller litiummetall omfattas inte.

Exempel på viktiga användningsområden är:

– telekommunikation
– kraftverksdrift
– centrala nödbelysnings- och larmanläggningar
– anläggningar för avbrottsfri kraft (UPS)
– start av stationära motorer
– installationer med solceller.

De allmänna säkerhetsfordringarna på laddningsbara batterier och installationer, liksom allmän säkerhetsinformation och definitioner anges för bly-syrabatterier, nickel-kadmiumbatterier och nickel-metallhydridbatterier i enlighet med IEC 62485-1.

2 Normativa hänvisningar

Följande standarder är nödvändiga vid tillämpningen av denna standard. Beträffande daterade hänvisningar till publikationer gäller den utgåva som anges nedan. Vid odaterade hänvisningar gäller den senaste utgåvan av publikationen.

[2] Se Elinstallationsreglerna, SS 436 40 00.

IEC 60050-482, *International Electrotechnical Vocabulary – Part 482: Primary and secondary cells and batteries* (Revision of IEV Part 481 and 486 Primary and secondary batteries)

IEC 60364-4-41:2005, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*
IEC 60364-4-41:2005/A1:2017

IEC 60364-4-43, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-5-53, *Electrical installations of buildings – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60364-5-54, *Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60417, *Graphical symbols for use on equipment* (tillgänglig på http://www.graphical-symbols.info/equipment)

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

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60755, *General safety requirements for residual current operated protective devices*

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 (functional safety) in industrial locations*

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

IEC/TR 61340-1, *Electrostatics – Part 1: Electrostatic phenomena – Principles and measurements*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC 61660-1, *Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 1: Calculation of short-circuit currents*

IEC 61660-2, *Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 2: Calculation of effects*

IEC 62133-2, *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 – Part 2: Lithium systems*

IEC 62485-1, *Safety requirements for secondary batteries and battery installations – Part 1: General safety information*

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 application*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

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

ISO 7010, *Graphical symbols – Safety colours and safety signs – Registered safety signs*

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62485-5

January 2021

ICS 29.220.20; 29.220.30

English Version

Safety requirements for secondary batteries and battery installations - Part 5: Safe operation of stationary lithium ion batteries (IEC 62485-5:2020)

Exigences de sécurité pour les batteries d'accumulateurs et les installations de batteries - Partie 5: Fonctionnement en toute sécurité des batteries ions-lithium stationnaires (IEC 62485-5:2020)

Sicherheitsanforderungen an sekundäre Batterien und Batterieanlagen - Teil 5: Sicherer Betrieb von stationären Lithium-Ionen-Batterien (IEC 62485-5:2020)

This European Standard was approved by CENELEC on 2020-12-30. 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 62485-5:2021 E

European foreword

The text of document 21/1069/FDIS, future edition 1 of IEC 62485-5, prepared by IEC/TC 21 "Secondary cells and batteries" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62485-5:2021.

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) 2021-09-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-12-30

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 62485-5:2020 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 60065	NOTE	Harmonized as EN 60065
IEC 60079-10-1	NOTE	Harmonized as EN 60079-10-1
IEC 60364-1	NOTE	Harmonized as HD 60364-1
IEC 60364-4-42	NOTE	Harmonized as HD 60364-4-42
IEC 60364-5-54	NOTE	Harmonized as HD 60364-5-54
IEC 60364-7-706	NOTE	Harmonized as HD 60364-7-706
IEC 60695-11-20	NOTE	Harmonized as EN 60695-11-20
IEC 60695-11-10	NOTE	Harmonized as EN 60695-11-10
IEC 60900	NOTE	Harmonized as EN IEC 60900
IEC 60950-1	NOTE	Harmonized as EN 60950-1
IEC 60990	NOTE	Harmonized as EN 60990
IEC 61000-4-2	NOTE	Harmonized as EN 61000-4-2
IEC 61000-6-5	NOTE	Harmonized as EN 61000-6-5
ISO 9773	NOTE	Harmonized as EN ISO 9773

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	-	International Electrotechnical Vocabulary - Part 482: Primary and secondary cells and batteries	-	-
IEC 60364-4-41 (mod)	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 60364-4-43	-	IEC 60364-4-43 Ed. 4: Low-voltage electrical installations - Part 4-43: Protection for safety - Protection against overcurrent	-	-
IEC 60364-5-53	-	Low-voltage electrical installations - Part 5-53: Selection and erection of electrical equipment - Protection, isolation, switching, control and monitoring	-	-
IEC 60364-5-54	-	Low-voltage electrical installations - Part 5-54: Selection and erection of electrical equipment - Earthing arrangements and protective conductors	HD 60364-5-54	-
IEC 60417	-	Graphical symbols for use on equipment. Index, survey and compilation of the single sheets.	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60664-1	2020	Insulation coordination for equipment within low-voltage supply systems - Part 1: Principles, requirements and tests	EN IEC 60664-1	2020
IEC 60755	-	General safety requirements for residual current operated protective devices	-	-

Publication	Year	Title	EN/HD	Year
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[1]	-
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/TR 61340-1	-	Electrostatics - Part 1: Electrostatic phenomena - Principles and measurements	-	-
IEC 61340-5-1	-	Electrostatics - Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements	EN 61340-5-1	-
IEC 61660-1	-	Short-circuit currents in d.c. auxiliary installations in power plants and substations - Part 1: Calculation of short-circuit currents	EN 61660-1	-
IEC 61660-2	-	Short-circuit currents in d.c. auxiliary installations in power plants and substations - Part 2: Calculation of effects	EN 61660-2	-
IEC 62133-2	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary lithium cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems	EN 62133-2	-

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

Publication	Year	Title	EN/HD	Year
IEC 62485-1	-	Safety requirements for secondary batteries and battery installations - Part 1: General safety information	EN IEC 62485-1	-
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/IEC Guide 51	-	Safety aspects - Guidelines for their inclusion in standards	-	-
ISO 3864	series	Graphical symbols - Safety colours and safety signs	-	-
ISO 7010	-	Graphical symbols - Safety colours and safety signs - Registered safety signs	-	-

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colour inside

Safety requirements for secondary batteries and battery installations – Part 5: Safe operation of stationary lithium ion batteries

Exigences de sécurité pour les batteries d'accumulateurs et les installations de batteries – Partie 5: Fonctionnement en toute sécurité des batteries ions-lithium stationnaires

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY REQUIREMENTS FOR SECONDARY BATTERIES AND BATTERY INSTALLATIONS –

Part 5: Safe operation of stationary lithium ion 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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International Standard IEC 62485-5 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
21/1069/FDIS	21/1076/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.

INTRODUCTION

The described safety requirements comprise the protective measures to protect from hazards generated by electricity and chemical substances when using secondary batteries. In addition measures are described to maintain the functional safety of batteries and battery installations.

For electrical safety (protection against electric shock) under Clause 4, this document refers to IEC 60364-4-41. The pilot function of this document is fully observed by indication of cross-reference numbers of the relevant clauses, but interpretation is given where adoption to direct current (DC) circuits is required.

This document comes into force with the date of publication and applies to all new batteries and battery installations. Previous installations are intended to conform to the existing national standards at the time of installation. In the case of the redesign of old installations, this document applies.

Lithium ion cells/batteries used in stationary industrial applications are intended to fulfil safety requirements in accordance with IEC 62619.

SAFETY REQUIREMENTS FOR SECONDARY BATTERIES AND BATTERY INSTALLATIONS –

Part 5: Safe operation of stationary lithium ion batteries

1 Scope

This part of IEC 62485 applies to the installation of one or more stationary secondary batteries having a maximum aggregate DC voltage of 1 500 V to any DC part of the power network, and describes the principal measures for protections during normal operation or under expected fault conditions against hazards generated from:

– electricity,
– short-circuits,
– electrolyte,
– gas emission,
– fire,
– explosion.

This document provides requirements on safety aspects associated with the installation, use, inspection, and maintenance and disposal of lithium ion batteries used in stationary applications.

This document covers stationary batteries for industrial applications that are installed in separate closed buildings or housings as well as stationary batteries that are installed in public buildings, offices and private residences. This document also covers the maintenance and disposal of lithium ion batteries used in stationary applications.

Batteries containing lithium metal are not covered by this document.

Examples of the main applications are:

– telecommunications,
– power station operation,
– central emergency lighting and alarm systems,
– uninterruptible power supplies (UPS),
– stationary engine starting,
– photovoltaic systems.

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 60050-482, *International Electrotechnical Vocabulary (IEV) – Part 482: Primary and secondary cells and batteries*

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 60364-4-43, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-5-53, *Low-voltage electrical installations – Part 5-53: Selection and erection of electrical equipment – Devices for protection for safety, isolation, switching, control and monitoring*

IEC 60364-5-54, *Low-voltage electrical installations – Part 5-54: Selection and erection of electrical equipment – Earthing arrangements and protective conductors*

IEC 60417, *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

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

IEC 60664-1:2020, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60755, *General safety requirements for residual current operated protective devices*

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/TR 61340-1, *Electrostatics – Part 1: Electrostatic phenomena – Principles and measurements*

IEC 61340-5-1, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC 61660-1, *Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 1: Calculation of short-circuit currents*

IEC 61660-2, *Short-circuit currents in d.c. auxiliary installations in power plants and substations – Part 2: Calculation of effects*

IEC 62133-2, *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 – Part 2: Lithium systems*

IEC 62485-1, *Safety requirements for secondary batteries and battery installations – Part 1: General safety information*

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/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

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

ISO 7010, *Graphical symbols – Safety colours and safety signs – Registered safety signs*