SVENSK STANDARD SS-EN 62924

Fastställd	Utgåva	Sida	Ansvarig kommitté
2017-12-20	1	1 (1+42)	SEK TK 9

Järnvägstillämpningar – Fasta installationer – Stationära energilagringssystem för banmatningssystem med likspänning

Railway applications – Fixed installations – Stationary energy storage system for DC traction systems

Som svensk standard gäller europastandarden EN 62924:2017. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62924:2017.

Nationellt förord

Europastandarden EN 62924:2017

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62924, First edition, 2017 - Railway applications - Fixed installations - Stationary energy storage system for DC traction systems**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 45.060.01

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62924

April 2017

ICS 45.060.01

English Version

Railway applications - Fixed installations - Stationary energy storage system for DC traction systems (IEC 62924:2017)

Applications ferroviaires - Installations fixes - Système fixe de stockage de l'énergie pour les systèmes de traction en courant continu (IEC 62924:2017)

Bahnanwendungen - Ortsfeste Anlagen - Ortsfeste Energiespeichersysteme für Gleichstrombahnen (IEC 62924:2017)

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 62924:2017 E

SEK Svensk Elstandard

European foreword

The text of document 9/2221/FDIS, future edition 1 of IEC 62924, 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 62924:2017.

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)	2017-12-03
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-03-03

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 62924:2017 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 60146-2:1999	NOTE	Harmonized as EN 60146-2:2000.
IEC 61881-3	NOTE	Harmonized as EN 61881-3.
IEC 62620	NOTE	Harmonized as EN 62620.
IEC 62864-1:2016	NOTE	Harmonized as EN 62864-1:2016.
IEC 62928[1]	NOTE	Harmonized as FprEN 62928.

1) To be published.

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 1 When 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 60146-1	series	Semiconductor converters - General requirements and line commutated converters	EN 60146-1	series
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)		-
IEC 60850	-	Railway applications - Supply voltages of traction systems		-
IEC 61936-1	-	Power installations exceeding 1 kV a.c. -- Part 1: Common rules	EN 61936-1	-
IEC 61992-7-1	-	Railway applications - Fixed installations -- DC switchgear - Part 7-1: Measurement, control and protection devices for specific use in d.c. traction systems - Application guide		-
IEC 62236	series	Railway applications - Electromagnetic compatibility		series
IEC 62236-1	-	Railway applications - Electromagnetic compatibility -- Part 1: General		-
IEC 62236-5	-	Railway applications - Electromagnetic compatibility -- Part 5: Emission and immunity of fixed power supply installations and apparatus		-
IEC 62590	2010	Railway applications - Fixed installations -- Electronic power converters for substations		-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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RAILWAY APPLICATIONS – FIXED INSTALLATIONS – STATIONARY ENERGY STORAGE SYSTEM FOR DC TRACTION SYSTEMS

FOREWORD

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International Standard IEC 62924 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
9/2221/FDIS	9/2244/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.

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.

INTRODUCTION

To save natural resources and counteract global warming, techniques to save energy and/or to improve environmental characteristics are drawing strong interest. In the railway industry, electric rail vehicles fitted with regenerative braking systems have been introduced, not only to save energy, but also to ease maintenance and to reduce the adverse effects of heat generated during braking (especially in tunnels).

However, in DC electric railways, when a train regenerates power, usually the power has to be consumed within the DC network, because DC power supply substations are usually not reversible. There is no guarantee that adequate load exists for regenerative braking trains; in such a circumstance, regenerative braking becomes ineffective, either in part or in whole. In this situation, the power supply network is unreceptive. Among the emerging technologies to improve receptivity is stationary energy storage systems (ESSs). A stationary ESS charges regenerative energy when the power supply network is unreceptive and stores it for use at a later time.

International Standards for stationary ESSs have not been issued. Before ESSs become widely used, international standardization of the basic system structure and measurement method for efficiency, etc., will serve as a guideline for users and manufacturers who want to introduce ESSs.

RAILWAY APPLICATIONS – FIXED INSTALLATIONS – STATIONARY ENERGY STORAGE SYSTEM FOR DC TRACTION SYSTEMS

1 Scope

This document specifies the requirements and test methods for a stationary energy storage system to be introduced as a trackside installation and used in a power supply network of a DC electrified railway. This system can take electrical energy from the DC power supply network, store the energy, and supply the energy back to the DC power supply network when necessary. This document does not apply to onboard energy storage systems.

This document applies to systems which are installed to achieve one or more of the following objectives.

- Absorption of regenerative energy:
  - effective use of regenerative energy (saving energy);
  - reduction of rolling stock maintenance (reduction of brake shoe/pad wear, etc.);
  - avoidance of adverse effects of heat generated during braking (e.g. in tunnels, etc.).
- Power compensation:
  - compensation of line voltage;
  - reduction of peak power;
  - reduction in the requirement of the rectifier ratings.

If this system is combined with one or more of the following functions, this document may be used as a guideline:

- reverse transmission of regenerated power to the upstream power supply network (e.g. inverting or reversible substations);
- use of the regenerated energy for purposes other than the running of trains, such as for station facilities, etc.;
- resistive consumption of regenerated power.

Although it is assumed that the system uses the following typical energy storage technologies, this document also applies to other existing or future technologies:

- batteries (lithium-ion, nickel metal hydride, etc.);
- capacitors (electric double layer capacitors, lithium-ion capacitors, etc.);
- flywheels.

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 60146 (all parts), *Semiconductor converters*

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

IEC 60850, *Railway applications – Supply voltages of traction systems*

IEC 61936-1, *Power installations exceeding 1 kV a.c. – Part 1: Common rules*

IEC 61992-7-1:2006, *Railway applications – Fixed installations – DC switchgear – Part 7-1: Measurement, control and protection devices for specific use in d.c. traction systems – Application guide*

IEC 62236 (all parts), *Railway applications – Electromagnetic compatibility*

IEC 62236-1, *Railway applications – Electromagnetic compatibility – Part 1: General*

IEC 62236-5, *Railway applications – Electromagnetic compatibility – Part 5: Emission and immunity of fixed power supply installations and apparatus*

IEC 62590:2010, *Railway applications – Electronic power converters for substations*