ICS 45.060.01 SLOVENSKÁ TECHNICKÁ NORMA Máj 2018

STN	**Dráhové aplikácie Elektrické zariadenia koľajových vozidiel Časť 2: Elektrotechnické súčasti Všeobecné pravidlá**	**STN EN 60077-2 34 1510**

Railway applications - Electric equipment for rolling stock - Part 2: Electrotechnical components - General rules

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/18

Obsahuje: EN 60077-2:2017, IEC 60077-2:2017

Oznámením tejto normy sa od 01.09.2020 ruší
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 60077-2

November 2017

ICS 45.060.01

Supersedes EN 60077-2:2002

English Version

Railway applications - Electric equipment for rolling stock - Part 2: Electrotechnical components - General rules (IEC 60077-2:2017)

Applications ferroviaires - Equipements électriques du matériel roulant - Partie 2: Composants électrotechniques - Règles générales
(IEC 60077-2:2017)

Bahnanwendungen - Elektrische Betriebsmittel auf Bahnfahrzeugen - Teil 2: Elektrotechnische Bauteile - Allgemeine Regeln
(IEC 60077-2:2017)

This European Standard was approved by CENELEC on 2017-09-01. 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, 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 60077-2:2017 E

EN 60077-2:2017

European foreword

The text of document 9/2267/FDIS, future edition 2 of IEC 60077-2, 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 60077-2:2017.

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)	2018-06-01
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-09-01

This document supersedes EN 60077-2:2002.

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 60077-2:2017 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 60077-3	NOTE	Harmonized as EN 60077-3.
IEC 60077-4	NOTE	Harmonized as EN 60077-4.
IEC 60077-5	NOTE	Harmonized as EN 60077-5.
IEC 60947-1	NOTE	Harmonized as EN 60947-1.
IEC 60947-4-1	NOTE	Harmonized as EN 60947-4-1.
IEC 61140	NOTE	Harmonized as EN 61140.
IEC 61373	NOTE	Harmonized as EN 61373.

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 60050-811	2017	International Electrotechnical Vocabulary (IEV) - Chapter 811: Electric traction	-	-
IEC 60068-2-1	-	Environmental testing - Part 2-1: Tests - Test A: Cold	EN 60068-2-1	-
IEC 60068-2-2	-	Environmental testing - Part 2-2: Tests - Test B: Dry heat	EN 60068-2-2	-
IEC 60068-2-30	-	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-
IEC 60068-2-52	-	Environmental testing - Part 2-52: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	EN 60068-2-52	-
IEC 60068-2-78	-	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	-
IEC 60077-1	2017	Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules	EN 60077-1	2017
IEC 60417-DB	-	Graphical symbols for use on equipment	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC/TR 60943	-	Guidance concerning the permissible temperature rise for parts of electrical equipment, in particular for terminals	-	-

IEC 60077-2

Edition 2.0 2017-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components – General rules

Applications ferroviaires – Equipements électriques du matériel roulant – Partie 2: Composants électrotechniques – Règles générales

IEC 60077-2:2017-07(en-fr)

IEC 60077-2

Edition 2.0 2017-07

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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RAILWAY APPLICATIONS – ELECTRIC EQUIPMENT FOR ROLLING STOCK –

Part 2: Electrotechnical components – General rules

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 60077-2 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

This second edition cancels and replaces the first edition of IEC 60077-2, issued in 1999. It constitutes a technical revision.

This edition includes the following main technical changes with regard to the previous edition:

a) Short circuit breaking capacity;
b) Rated short-time withstand current;
c) Critical currents range;
d) Climatic conditions are specified.

This standard is to be read in conjunction with IEC 60077-1.

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

FDIS	Report on voting
9/2267/FDIS	9/2279/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.

A list of all parts in the IEC 60077 series, published under the general title *Railway applications – Electric equipment for rolling stock*, can be found on the IEC website.

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 website 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.

RAILWAY APPLICATIONS – ELECTRIC EQUIPMENT FOR ROLLING STOCK –

Part 2: Electrotechnical components – General rules

1 Scope

In addition to the rules given in IEC 60077-1, this part of IEC 60077 provides general rules for all electrotechnical components installed in power circuits, auxiliary circuits, control and indicating circuits, etc., on railway rolling stock.

The purpose of this document is to adapt the general rules given in IEC 60077-1 to all electrotechnical components for rolling stock, in order to obtain uniformity of requirements and tests for the corresponding range of components.

Electrotechnical components are mainly switchgear and controlgear, including also relays, valves, resistors, fuses, etc., irrespective of the nature of their control.

The incorporation of electronic components or electronic subassemblies into electrotechnical components is now common practice. Although this document is not applicable to electronic equipment, the presence of electronic components does not give grounds to exclude such electrotechnical components from the scope of this document.

Electronic subassemblies comply with the relevant standard.

Some of these rules, after agreement between the user and the manufacturer, are used for electrotechnical components installed on vehicles other than railway rolling stock, such as mine locomotives, trolleybuses, etc.

This document states:

a) the characteristics of the components;

b) the service conditions with which components have to comply;

c) the tests intended to confirm compliance of the components with these characteristics under these service conditions, and the methods to be adopted for these tests;

d) the information to be marked on, or given with, the apparatus.

This document does not cover industrial electrotechnical components which comply with their own product standard. In order to ensure satisfactory operation of these components for rolling stock, this document is used to specify only the particular requirements for railway application. In that case, a specific document would state the additional requirements with which the industrial components are to comply, e.g.:

– to be adapted (for example for control voltage, environmental conditions, etc.); or

– to be installed and used so as not to have to endure specific railway conditions; or

– to be additionally tested to prove that these components can satisfactorily withstand railway conditions.

In the event of there being a difference in requirements between this document and a railway rolling stock relevant product standard, then the product standard requirements take precedence.

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 60050-811:2017, *International Electrotechnical Vocabulary (IEV) – Chapter 811: Electric traction*

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-30, *Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)*

IEC 60068-2-52, *Environmental testing – Part 2-52: Test methods – Test Kb: Salt mist, cyclic (sodium, chloride solution)*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60077-1:2017, *Railway applications – Electric equipment for rolling stock – Part 1: General service conditions and general rules*

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 TR 60943, *Guidance concerning the permissible temperature rise for parts of electrical equipment, in particular for terminals*