BS EN IEC 60077-3:2019

BSI Standards Publication

Railway applications — Electric equipment for rolling stock

Part 3: Electrotechnical components — Rules for DC circuit-breakers

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National foreword

This British Standard is the UK implementation of EN IEC 60077-3:2019. It is identical to IEC 60077-3:2019. It supersedes BS EN 60077-3:2002, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/9, Railway Electrotechnical Applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60077-3

December 2019

ICS 45.060.01

Supersedes EN 60077-3:2002 and all of its amendments and corrigenda (if any)

English Version

Railway applications - Electric equipment for rolling stock - Part 3: Electrotechnical components - Rules for DC circuit-breakers (IEC 60077-3:2019)

Applications ferroviaires - Équipements électriques du matériel roulant - Partie 3: Composants électrotechniques - Règles pour disjoncteurs à courant continu (IEC 60077-3:2019)

Bahnanwendungen - Elektrische Betriebsmittel auf Fahrzeugen - Teil 3: Elektrotechnische Bauteile - Regeln für DC-Leistungsschalter (IEC 60077-3:2019)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 9/2537/FDIS, future edition 2 of IEC 60077-3, 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 60077-3:2019.

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) 2020-08-29
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-11-29

This document supersedes EN 60077-3:2002 and all of its amendments and corrigenda (if any).

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 60077-3:2019 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 60947-2 NOTE Harmonized as EN 60947-2

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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 60077-1	2017	Railway applications - Electric equipment for rolling stock - Part 1: General service conditions and general rules	EN 60077-1	2017
IEC 60077-2	2017	Railway applications - Electric equipment for rolling stock - Part 2: Electrotechnical components - General rules	EN 60077-2	2017
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 61373	-	Railway applications - Rolling stock equipment - Shock and vibration tests	EN 61373	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RAILWAY APPLICATIONS – ELECTRIC EQUIPMENT FOR ROLLING STOCK –

Part 3: Electrotechnical components – Rules for DC circuit-breakers

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 60077-3 has been prepared by IEC technical committee 9: Electrical equipment and systems for railways.

This second edition cancels and replaces the first edition, issued in 2001. It constitutes a technical revision.

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

a) procedure of verification of temperature rise is changed;
b) air-tightness test as type test, insulation resistance measurement are added.

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

FDIS	Report on voting
9/2537/FDIS	9/2553/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.

This document should be read in conjunction with IEC 60077-1 and IEC 60077-2.

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.

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.

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RAILWAY APPLICATIONS – ELECTRIC EQUIPMENT FOR ROLLING STOCK –

Part 3: Electrotechnical components – Rules for DC circuit-breakers

1 Scope

In addition to the general requirements of IEC 60077-2, this part of IEC 60077 gives the rules for circuit-breakers, the main contacts of which are connected to DC power and/or auxiliary circuits. The nominal voltage of these circuits does not exceed 3 000 V DC according to IEC 60850.

This part of IEC 60077, together with IEC 60077-2, states specifically:

a) the characteristics of the circuit-breakers;

b) the service conditions with which circuit-breakers complies with reference to:

- operation and behaviour in normal service;
- operation and behaviour in the case of short circuit;
- dielectric properties;

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

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

NOTE 1 Circuit-breakers which are dealt with in this document can be provided with devices for automatic opening under predetermined conditions other than those of overcurrent, for example, under-voltage and reversal of power flow direction. This document does not deal with the verification of operation under such predetermined conditions.

NOTE 2 The incorporation of electronic components or electronic sub-assemblies into electrotechnical components is now common practice.

Although this document is not applicable to electronic equipment, the presence of electronic components does not provide a reason to exclude such electrotechnical components from the scope.

Electronic sub-assemblies included in circuit-breakers comply with the relevant document for electronics (IEC 60571).

NOTE 3 Certain of these rules, after agreement between the user and the manufacturer, are used for electro-technical components installed on vehicles other than rail rolling stock such as mine locomotives, trolleybuses, etc. In this case, particular additional requirements can be necessary.

This document does not cover:

e) multi-connection of electro-technical components to achieve a particular duty;

f) industrial circuit-breakers which complies with IEC 60947-2;

g) DC circuit-breakers for fixed installations which complies with IEC 61992-2.

For f) and g), in order to ensure satisfactory operation, this document is used to specify only the particular requirements for rolling stock. In such cases, a specific document states the additional requirements with which the industrial or fixed installations circuits breakers comply, for example:

- either to be adapted (for example, for control voltage, environmental conditions, etc.);
- or to be installed and used in such a way that they do not have to endure specific rolling stock conditions;

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