



BSI Standards Publication

Railway applications — Electric equipment for rolling stock

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

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 It supersedes BS EN 60077-3:2002, which is withdrawn.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.

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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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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

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-11-29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

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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

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	7
3 Terms, definitions and abbreviated terms	7
3.1 Components	7
3.2 Component parts	8
3.3 Operational features	9
3.4 Breaking characteristics	10
3.5 Abbreviated terms	12
4 Classification	12
5 Characteristics	12
5.1 List of characteristics	12
5.2 Type of circuit-breaker	12
5.3 Rated values and limiting values for the main circuit	13
5.3.1 General	13
5.3.2 Rated voltages	13
5.3.3 Rated currents	13
5.3.4 Rated time constants	13
5.3.5 Rated short-circuit making and breaking capacity	14
5.4 Operational frequencies	14
5.5 Electric and pneumatic control circuits	14
5.6 Electric and pneumatic auxiliary circuits	14
5.7 Overcurrent release	14
5.8 Peak arc voltages	14
6 Product information	14
6.1 Component documentation	14
6.2 Marking	15
7 Normal service conditions	15
8 Constructional and performance requirements	15
8.1 Constructional requirements	15
8.2 Performance requirements	15
8.2.1 Operating conditions	15
8.2.2 Temperature limits	15
8.2.3 Operation following inactivity	15
8.2.4 Electromagnetic compatibility (EMC)	15
8.2.5 Acoustic noise emission	15
8.2.6 Clearances	15
8.2.7 Creepage distances	15
8.2.8 Switching overvoltages	15
8.2.9 Operational performance capability	16
8.2.10 Ability to withstand vibration and shock	16
8.2.11 Ability to make and break under short-circuit conditions	17
9 Tests	17
9.1 Kinds of tests	17
9.1.1 General	17

9.1.2	Type tests.....	17
9.1.3	Routine tests	17
9.1.4	Investigation tests.....	17
9.2	Verification of constructional requirements.....	18
9.2.1	General	18
9.2.2	Type tests.....	18
9.2.3	Routine tests	18
9.3	Type tests for verification of performance requirements	18
9.3.1	Test sequences	18
9.3.2	General test conditions	19
9.3.3	Test sequence I: General performance characteristics.....	20
9.3.4	Test sequence II: Rated short-circuit making and breaking capacities.....	21
9.3.5	Test sequence III: Ability to withstand vibration and shock.....	23
9.3.6	Test sequence IV: Searching for critical currents	24
9.3.7	Test sequence V: Climatic conditions	24
9.3.8	Test sequence VI: Other tests.....	24
9.4	Routine tests for verification of performance requirements	25
9.4.1	General	25
9.4.2	Functional test.....	25
9.4.3	Measurement of resistance.....	25
9.4.4	Calibration of releases.....	25
9.4.5	Air-tightness (for pneumatic circuit-breaker)	25
9.4.6	Dielectric withstand	25
Annex A (normative)	Test circuit to verify the making and breaking capacities	26
Annex B (informative)	Verification of short-circuit making and breaking capacities	27
Bibliography	29
Figure A.1	– Diagram of the test circuit	26
Figure B.1	– Calibration of the circuit to obtain the prospective peak making current	27
Figure B.2	– Oscillogram corresponding to a break after the current has passed its maximum value.....	28
Figure B.3	– Oscillogram corresponding to a break before the current has reached its maximum value (current-limiting circuit-breaker).....	28
Table 1	– Rated time constants.....	13
Table 2	– Operational performance capability	16
Table 3	– List of type test sequences for performance requirements	18
Table 4	– Tolerances on test values.....	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RAILWAY APPLICATIONS –
ELECTRIC EQUIPMENT FOR ROLLING STOCK –****Part 3: Electrotechnical components –
Rules for DC circuit-breakers**

FOREWORD

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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.

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.

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;