



**NSAI**  
Standards

Irish Standard  
I.S. EN 60934:2001

# Circuit-breakers for equipment (CBE) (IEC 60934:2000 (EQV))

## I.S. EN 60934:2001

*Incorporating amendments/corrigenda issued since publication:*

EN 60934:2001/A2:2013  
EN 60934:2001/A1:2007

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I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i>	<i>This document is based on:</i> EN 60934:2001	<i>Published:</i> 26 January, 2001
This document was published under the authority of the NSAI and comes into effect on:  15 June, 2001		ICS number: 29.120.40 29.120.50
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English version

**Circuit-breakers for equipment (CBE)**  
(IEC 60934:2000/A2:2013)

Disjoncteurs pour équipement (DPE)  
(CEI 60934:2000/A2:2013)

Geräteschutzschalter (GS)  
(IEC 60934:2000/A2:2013)

This amendment A2 modifies the European Standard EN 60934:2001; it was approved by CENELEC on 2013-02-22. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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**CENELEC**

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## **Foreword**

The text of document 23E/767/FDIS, future edition 1 of IEC 60934:2000/A2, prepared by SC 23E, "Circuit-breakers and similar equipment for household use", of IEC TC 23, "Electrical accessories" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60934:2001/A2:2013.

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) 2013-11-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-02-22

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## **Endorsement notice**

The text of the International Standard IEC 60934:2000/A2:2013 was approved by CENELEC as a European Standard without any modification.

I.S. EN 60934:2001

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60934/A1**

February 2007

ICS 29.120.50; 29.120.40

English version

**Circuit-breakers for equipment (CBE)**  
(IEC 60934:2000/A1:2007)

Disjoncteurs pour équipement (DPE)  
(CEI 60934:2000/A1:2007)

Geräteschutzschalter (GS)  
(IEC 60934:2000/A1:2007)

This amendment A1 modifies the European Standard EN 60934:2001; it was approved by CENELEC on 2007-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

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**CENELEC**

European Committee for Electrotechnical Standardization  
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**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

**I.S. EN 60934:2001**

EN 60934:2001/A1:2007

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**Foreword**

The text of document 23E/624/FDIS, future amendment 1 to IEC 60934:2000, prepared by SC 23E, Circuit-breakers and similar equipment for household use, of IEC TC 23, Electrical accessories, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60934:2001 on 2007-02-01.

The following dates were fixed:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2007-11-01
- latest date by which the national standards conflicting with the amendment have to be withdrawn (dow) 2010-02-01

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**Endorsement notice**

The text of amendment 1:2007 to the International Standard IEC 60934:2000 was approved by CENELEC as an amendment to the European Standard without any modification.

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**I.S. EN 60934:2001**

**EUROPEAN STANDARD**

**EN 60934**

**NORME EUROPÉENNE**

**EUROPÄISCHE NORM**

January 2001

ICS 29.120.40;29.120.50

Supersedes EN 60934:1994 + A1:1994 + A2:1997 + A11:1998

English version

**Circuit-breakers for equipment (CBE)**  
(IEC 60934:2000)

Disjoncteurs pour équipement (DPE)  
(CEI 60934:2000)

Geräteschutzschalter (GS)  
(IEC 60934:2000)

This European Standard was approved by CENELEC on 2000-11-01. 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.

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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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 23E/430/FDIS, future edition 3 of IEC 60934, prepared by SC 23E, Circuit-breakers and similar equipment for household use, of IEC TC 23, Electrical accessories, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60934 on 2000-11-01.

This European Standard supersedes EN 60934:1994 + A1:1994 + A2:1997 + A11:1998.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2001-08-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2003-11-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B, C, D, E, G, H, J, K and ZA are normative and annex F is informative.

Annex ZA has been added by CENELEC.

In this standard the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

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## Endorsement notice

The text of the International Standard IEC 60934:2000 was approved by CENELEC as a European Standard without any modification.

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-151	1978	International Electrotechnical Vocabulary (IEV) Chapter 151: Electrical and magnetic devices	-	-
IEC 60050-441	1984	Chapter 441: Switchgear, controlgear and fuses	-	-
IEC 60050-604	1987	Chapter 604: Generation, transmission and distribution of electricity - Operation	-	-
IEC 60050-826	1982	Chapter 826: Electrical installations of buildings		
+ A1	1990			
+ A2	1995			
+ A3	1999		HD 384.2 S2	2001
IEC 60060-1	1989	High-voltage test techniques	HD 588.1 S1	1991
+ corr. March	1990	Part 1: General definitions and test requirements		
IEC 60068-2-20	1979	Basic environmental testing procedures Part 2: Tests - Test T: Soldering	HD 323.2.20 S3 <sup>1)</sup>	1988
IEC 60099-1	1991	Surge arresters Part 1: Non-linear resistor type gapped surge arresters for a.c. systems	EN 60099-1	1994
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	HD 21 <sup>2)</sup>	Series
IEC 60269	Series	Low-voltage fuses	EN 60269	Series

<sup>1)</sup> HD 323.2.20 S3 includes A2:1987 to IEC 60068-2-20.

<sup>2)</sup> The HD 21 series is related to but not equivalent to the IEC 60227 series.

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<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60417-1	1998	Graphical symbols for use on equipment Part 1: Overview and application	EN 60417-1	1999
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr May	1991 1993
IEC 60664	Series	Insulation coordination for equipment within low-voltage systems	-	-
IEC 60664-1 (mod)	1992	Part 1: Principles, requirements and tests	HD 625.1 S1 + corr. November	1996 1996
IEC 60664-3	1992	Part 3: Use of coatings to achieve insulation coordination of printed board assemblies	HD 625.3 S1	1997
IEC 60695-2-1/X	Series	Fire hazard testing Part 2: Test methods - Section 1: Glow- wire test methods	EN 60695-2-1/X <sup>3)</sup>	Series
IEC 60898	1995 <sup>4)</sup>	Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations	-	-
IEC 60947-1 (mod)	1999	Low-voltage switchgear and controlgear Part 1: General rules	EN 60947-1 + corr. October	1999 1999
IEC 60950 (mod) + corr. January	1999 2000	Safety of information technology equipment	EN 60950	2000
IEC 61000-4-2	1995	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	1995
IEC 61000-4-3 (mod)	1995	Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3	1996
IEC 61000-4-4	1995	Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	1995
IEC 61000-4-5	1995	Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995
CISPR 22 (mod)	1997	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement	EN 55022 + corr. August	1998 1999

<sup>3)</sup> EN 60695-2-1/X:1996 are superseded by EN 60695-2-10:2001 to EN 60695-2-13:2001, which are based on IEC 60695-2-10:2000 to IEC 60685-2-13:2000.

<sup>4)</sup> IEC 60898:1987 + corrigendum May 1988 + A2:1990 + A3:1990 + corrigendum August 1990, mod., are harmonized as EN 60898:1991. This European Standard applies with its corrigendum October 1991 and its amendments A1:1991 (IEC/A1:1989) and A11:1994 up to A19:2000.

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### CIRCUIT-BREAKERS FOR EQUIPMENT (CBE)

#### 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 60934 has been prepared by subcommittee 23E: Circuit-breakers and similar equipment for household use, of IEC technical committee 23: Electrical accessories.

This consolidated version of IEC 60934 consists of the third edition (2000) [documents 23E/430/FDIS and 23E/441/RVD], its amendment 1 (2007) [documents 23E/624/FDIS and 23E/627/RVD] and its amendment 2 (2013) [documents 23E/767/FDIS and 23E/774/RVD].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 3.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

Annexes A, B, C, D, E, G, H, J, K and L form an integral part of this standard.

Annex F is for information only.

In this standard, the following print types are used:

- Requirements proper: in roman type
- *Test specifications: in italic type*
- Explanatory matter: in smaller roman type.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site 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.



## CIRCUIT-BREAKERS FOR EQUIPMENT (CBE)

### 1 Scope

This International Standard is applicable to mechanical switching devices designed as "circuit-breakers for equipment" (CBE) for household and similar applications. CBEs according to this standard are intended to provide protection to circuits within electrical equipment including its components (e.g. motors, transformers, internal wiring). This standard covers also CBEs applicable for protection of electrical equipment in case of undervoltage and/or overvoltage. This standard also covers CBEs which are suitable for isolation.

NOTE The term "equipment" includes appliances.

CBEs are not applicable for overcurrent protection of wiring installations of buildings.

CBEs according to this standard have:

- a rated voltage not exceeding 440 V a.c. (between phases) and/or d.c. not exceeding 250 V;
- a rated current not exceeding 125 A;
- a short-circuit capacity ( $I_{cn}$ ) of at least  $6xI_n$  (a.c types) and  $4xI_n$  (d.c.-types) but not exceeding 3 000 A.

CBEs may have a conditional short-circuit current rating in association with a specified short-circuit protective device (SCPD). A guide for coordination of a CBE associated in the same circuit with a SCPD is given in Annex F.

For CBEs having a degree of protection higher than IP20 according to IEC 60529, for use in locations where hazardous environmental conditions prevail (e.g. excessive humidity, heat or cold or deposition of dust) and in hazardous locations (e.g. where explosions are liable to occur), special constructions may be required.

This standard contains all the requirements necessary to ensure compliance with the operational characteristics required for these devices by type tests. It also contains the details relative to test requirements and methods of testing necessary to ensure reproducibility of test results.

This standard states:

- a) the characteristics of CBEs;
- b) the conditions with which CBEs shall comply, with reference to:
  - 1) their operation and behaviour in normal service;
  - 2) their operation and behaviour in case of overload;
  - 3) their operation and behaviour in case of short-circuits up to their rated short-circuit capacity;
  - 4) their dielectric properties;
- c) the tests intended for confirming that these conditions have been met and the methods to be adopted for the tests;
- d) the data to be marked on the devices;
- e) the test sequences to be carried out and the number of samples to be submitted for certification purposes (see Annex C);
- f) the routine tests to be carried out to reveal unacceptable variations in material or manufacture, likely to affect safety (see Annex J).

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