

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Low-voltage electrical installations –
Part 4-43: Protection for safety – Protection against overcurrent**

**Installations électriques à basse tension –
Partie 4-43: Protection pour assurer la sécurité – Protection contre les
surintensités**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

**Part 4-43: Protection for safety –
Protection against overcurrent**

FOREWORD

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International Standard IEC 60364-4-43 has been prepared by IEC technical committee 64: Electrical installations and protection against electric shock.

This third edition cancels and replaces the second edition, published in 2001, and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- Annex B "IEC 60364 – Parts 1 to 6: Restructuring" deleted.
- Introduction of new informative Annexes B, C and D.
- Information concerning flexible cables added to Scope.
- The word "phase" changed to "line" throughout the standard.
- Requirement not to distribute the neutral in IT systems changed to a NOTE.
- Requirements added for overload detection for the neutral conductor for harmonic currents.

- Requirement that devices for protection against short-circuit current be capable of making as well as breaking short-circuit current added.
- Information added to clarify protection against overload current.
- Requirements where devices for protection against overload need not be provided expanded.
- More examples given where omission of devices for protection against overload is permitted.
- Requirements where devices for protection against short-circuit need not be provided expanded.
- Requirements for short-circuit current ratings of busbar trunking systems added.

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

FDIS	Report on voting
64/1641/FDIS	64/1656/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The reader's attention is drawn to the fact that Annex E lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this standard.

A list of all parts in the IEC 60364 series, under the general title *Low-voltage electrical installations*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

The contents of the corrigendum of October 2008 have been included in this copy.

LOW-VOLTAGE ELECTRICAL INSTALLATIONS –

Part 4-43: Protection for safety – Protection against overcurrent

43 Protection against overcurrent

430.1 Scope

This part of IEC 60364 provides requirements for the protection of live conductors from the effects of overcurrents.

This standard describes how live conductors are protected by one or more devices for the automatic disconnection of the supply in the event of overload (Clause 433) and short-circuit (Clause 434) except in cases where the overcurrent is limited in accordance with Clause 436 or where the conditions described in 433.3 (omission of devices for protection against overload) or 434.3 (omission of devices for protection against short-circuit) are met. Coordination of overload protection and short-circuit protection is also covered (Clause 435).

NOTE 1 Live conductors protected against overload in accordance with Clause 433 are considered to be protected also against faults likely to cause overcurrents of a magnitude similar to overload currents.

NOTE 2 The requirements of this standard do not take account of external influences.

NOTE 3 Protection of conductors according to this standard does not necessarily protect the equipment connected to the conductors.

NOTE 4 Flexible cables connecting equipment by plugs and socket-outlet to fixed installations are not part of the scope of this standard and for this reason are not necessarily protected against overcurrent.

NOTE 5 Disconnection does not mean isolation in this standard.

430.2 Normative references

The following referenced documents are indispensable for the application 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 60269-2, *Low-voltage fuses – Part 2: Supplementary requirements for fuses for use by authorized persons (fuses mainly for industrial application) – Examples of standardized systems of fuses A to I*

IEC 60269-3, *Low-voltage fuses – Part 3: Supplementary requirements for fuses for use by unskilled persons (fuses mainly for household and similar applications) – Examples of standardized systems of fuses A to F*

IEC 60269-4, *Low-voltage fuses – Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices*

IEC 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-5-52:2001, *Electrical installations of buildings – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC 60439-2, *Low-voltage switchgear and controlgear assemblies – Part 2: Particular requirements for busbar trunking systems (busways)*

IEC 60724, *Short-circuit temperature limits of electric cables with rated voltages of 1 kV ($U_m = 1,2$ kV) and 3 kV ($U_m = 3,6$ kV)*

IEC 60898 (all parts), *Electrical accessories – Circuit-breakers for overcurrent protection for household and similar installations*

IEC 60947-2, *Low-voltage switchgear and controlgear – Part 2: Circuit-breakers*

IEC 60947-3, *Low-voltage switchgear and controlgear – Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units*

IEC 60947-6-2, *Low-voltage switchgear and controlgear – Part 6-2: Multiple function equipment – Control and protective switching devices (or equipment) (CPS)*

IEC 61009 (all parts), *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs)*

IEC 61534 (all parts), *Powertrack systems*

430.3 General requirements

Protective devices shall be provided to disconnect any overcurrent in the circuit conductors before such a current could cause danger due to thermal or mechanical effects detrimental to insulation, joints, terminations or material surrounding the conductors.

431 Requirements according to the nature of the circuits

431.1 Protection of line conductors

431.1.1 Detection of overcurrent shall be provided for all line conductors, except where 431.1.2 applies. It shall cause the disconnection of the conductor in which the overcurrent is detected but not necessarily the disconnection of the other live conductors.

If disconnection of a single phase may cause danger, for example in the case of a three-phase motor, appropriate precautions shall be taken.

431.1.2 In a TT or TN system, for a circuit supplied between line conductors and in which the neutral conductor is not distributed, overcurrent detection need not be provided for one of the line conductors, provided that the following conditions are simultaneously fulfilled:

- a) there exists, in the same circuit or on the supply side, protection intended to detect unbalanced loads and intended to cause disconnection of all the line conductors;
- b) the neutral conductor is not distributed from an artificial neutral point of the circuits situated on the load side of the protective device mentioned in a).

431.2 Protection of the neutral conductor

431.2.1 TT or TN systems

Where the cross-sectional area of the neutral conductor is at least equivalent to that of the line conductors, and the current in the neutral is expected not to exceed the value in the line conductors, it is not necessary to provide overcurrent detection for the neutral conductor or a disconnecting device for that conductor.