



**NSAI**  
Standards

Irish Standard  
I.S. HD 60364-4-43:2010

Low-voltage electrical installations --  
Part 4-43: Protection for safety -  
Protection against overcurrent (IEC  
60364-4-43:2008 (MOD) + corrigendum  
Oct. 2008 (EQV))

## I.S. HD 60364-4-43:2010

*Incorporating amendments/corrigenda issued since publication:*

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

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

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# HARMONIZATION DOCUMENT

# HD 60364-4-43

## DOCUMENT D'HARMONISATION

## HARMONISIERUNGSDOKUMENT

March 2010

ICS 91.140.50; 29.120.50

Supersedes HD 384.4.43 S2:2001 + corr. Dec.2005

English version

### **Low-voltage electrical installations - Part 4-43: Protection for safety - Protection against overcurrent** (IEC 60364-4-43:2008, modified + corrigendum Oct. 2008)

Installations électriques à basse tension -  
Partie 4-43: Protection pour assurer la  
sécurité -  
Protection contre les surintensités  
(CEI 60364-4-43:2008, modifiée +  
corrigendum oct. 2008)

Errichten von Niederspannungsanlagen -  
Teil 4-43: Schutzmaßnahmen -  
Schutz bei Überstrom  
(IEC 60364-4-43:2008, modifiziert +  
Corrigendum Oct. 2008)

This Harmonization Document was approved by CENELEC on 2010-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for implementation of this Harmonization Document at national level.

Up-to-date lists and bibliographical references concerning such national implementations may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French, German).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

## CENELEC

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

**Central Secretariat: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 64/1641/FDIS, future edition 1 of IEC 60364-4-43, prepared by TC 64, Electrical installations and protection against electric shock, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by SC 64B, Electrical installations and protection against electric shock – Protection against thermal effects, of Technical Committee CENELEC TC 64, Electrical installations and protection against electric shock, was submitted to the formal vote.

The combined texts were approved by CENELEC as HD 60364-4-43 on 2010-03-01.

This document supersedes HD 384.4.43 S2:2001 + corrigendum December 2005.

The main changes with respect to HD 384.4.43 S2:2001 are listed below:

- 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the HD has to be implemented  
at national level by publication of a harmonized  
national standard or by endorsement (dop) 2011-03-01
- latest date by which the national standards conflicting  
with the HD have to be withdrawn (dow) 2013-03-01

In this Harmonization Document modifications to the International Standard are indicated by a vertical line in the left margin of the text

Annexes ZA and ZB have been added by CENELEC.

## **43 Protection against overcurrent**

### **430.1 Scope**

This part of HD 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**

See Annex ZA

### **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.

Where the cross-sectional area of the neutral conductor is less than that of the line conductors, it is necessary to provide overcurrent detection for the neutral conductor, appropriate to the cross-sectional area of that conductor; this detection shall cause the disconnection of the line conductors, but not necessarily of the neutral conductor.

In both cases the neutral conductor shall be protected against short-circuit current.

NOTE This protection may be achieved by the overcurrent protective devices in the line conductors. In that case it is not necessary to provide overcurrent protection for the neutral conductor or a disconnecting device for that conductor.

Where the current in the neutral conductor is expected to exceed the value in the line conductors, refer to 431.2.3.

Except for disconnection the requirements for a neutral conductor apply to a PEN conductor.

### **431.2.2 IT systems**

Where the neutral conductor is distributed, it is necessary to provide overcurrent detection for the neutral conductor of every circuit. The overcurrent detection shall cause the disconnection of all the live conductors of the corresponding circuit, including the neutral conductor. This measure is not necessary if

- the particular neutral conductor is effectively protected against overcurrent by a protective device placed on the supply side, for example at the origin of the installation, or if
- the particular circuit is protected by a residual current operated protective device with a rated residual current not exceeding 0,20 times the current-carrying capacity of the corresponding neutral conductor. This device shall disconnect all the live conductors of the corresponding circuit, including the neutral conductor. The device shall have sufficient breaking capacity for all poles.

NOTE In IT systems, it is strongly recommended that the neutral conductor should not be distributed.

### **431.2.3 Harmonic currents**

Overload detection shall be provided for the neutral conductor in a multi-phase circuit where the harmonic content of the line currents is such that the current in the neutral conductor is expected to exceed the current-carrying capacity of that conductor. The overload detection shall be compatible with the nature of the current through the neutral and shall cause the disconnection of the line conductors but not necessarily the neutral conductor. Where the neutral is disconnected, the requirements of 431.3 apply.

NOTE Further requirements regarding protection of neutral conductors are given in IEC 60364-5-52.

## **431.3 Disconnection and reconnection of the neutral conductor in multi-phase systems**

Where disconnection of the neutral conductor is required, disconnection and reconnection shall be such that the neutral conductor shall not be disconnected before the line conductors and shall be reconnected at the same time as or before the line conductors.

## **432 Nature of protective devices**

The protective devices shall be of the appropriate types indicated by 432.1 to 432.3.

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