Low-voltage electrical installations - Part 5-52: Selection and erection of electrical equipment - Wiring systems


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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).

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Foreword

The text of the International Standard IEC 60364-5-52:2009, prepared by IEC TC 64, Electrical installations and protection against electric shock, together with common modifications prepared by the Technical Committee CENELEC TC 64, Electrical installations and protection against electric shock, was submitted to the formal vote and was approved by CENELEC as HD 60364-5-52 on 2011-01-24.


The main changes with respect to HD 384.5.52 S1:1995 + A1:1998 are as follows:

– Subclause 521.4 introduces minor changes with regard to busbar trunking systems and powertrack systems.
– Subclause 523.6 introduces minor changes with regard to the sizing of cables where harmonic currents are present.
– A new subclause 523.9 concerning single-core cables with a metallic covering has been introduced.
– Clause 525 introduces changes in the maximum value of voltage drop permitted between the origin of the consumer’s installation and the equipment which should not be greater than that given in the relevant annex.
– Clause 526 introduces minor changes to electrical connections including additional exceptions for inspection of connections and additional notes.
– Clause 528 introduces additional requirements with regard to proximity of underground power and telecommunication cables.
– Clause 529 introduces minor changes to selection and erection of wiring systems in relation to maintainability, including cleaning.

The following dates were fixed:

– latest date by which the existence of the HD has to be announced at national level (doa) 2011-07-24
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement (dop) 2012-01-24
– latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2014-01-24

Endorsement notice

The text of the International Standard IEC 60364-5-52:2009 was approved by CENELEC as a Harmonization Document with agreed common modifications as given below.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60332-3 series NOTE Harmonized in EN 60332-3 series (partially modified).
IEC 60332-3-24 NOTE Harmonized as EN 60332-3-24.
IEC 60364-4-43:2008 NOTE Harmonized as HD 60364-4-43:2010 (modified).
IEC 60364-7-715 NOTE Harmonized as HD 60364-7-715.
COMMON MODIFICATIONS

521.9.1
Add the following note:
NOTE Insulated flexible conductors or cores according to HD 516 may also be used as fixed installation.

528.2
Add the following new paragraph:
"In the case of proximity between cable distribution systems for radio and television signals and power line systems, EN 50083 should be considered."

528.2
Add the following note:
NOTE For the connection of combined socket-outlets for telecommunication (also aerial) and power line systems, EN 41003 should be considered.

Annex A - Table A.52.2 – Erection of wiring systems
Delete Table A.52.2.

Annex B - Table B52-18 – Current-carrying capacities
Table B.52.18, right column, line Number of circuits 16, change from 0.38 to 0.68.

Annex D - Formulae to express current-carrying capacities
Delete Annex D.

Add Annexes ZA to ZC below.
Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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

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Annex ZB
(normative)

Special national conditions

**Special national condition**: National characteristic or practice that cannot be changed even over a long period, e.g. climatic conditions, electrical earthing conditions.

*NOTE* If it affects harmonization, it forms part of the Harmonization Document.

For the countries in which the relevant special national conditions apply these provisions are normative, for other countries they are informative.

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| Norway  | 523.1  | In Norway the following additional requirements apply:  
Special requirement may apply in Norway due to national building practice and the extended use of insulation materials in building walls. |
| Germany | 521.11 | In Germany additional requirements apply (see annex to German Special National Condition on Clause 521.x) |
|         | 521.12 | In Germany the following additional requirements apply: |
|         |        | "521.x  Inherently short-circuit proof and inherently earth-fault-proof wiring  
Where protective devices for the protection in case of short-circuit in accordance with 473.2.2.1 of IEC 60364 are not used, cables and conductors shall be laid inherently short-circuit proof and inherently earth-fault-proof.  
The following types of wiring are regarded as inherently short-circuit proof and inherently earth-fault-proof:  
a) Conductor arrangements where contact between the conductors and contact with earthed parts are prevented and where no short-circuit is to be expected due to external influences (e.g. falling parts);  
b) Arrangement consisting of single-core cables, e.g. in accordance with IEC 60502, single-core non-metallic sheathed cables in accordance with IEC 60227-4 or single-core rubber insulated and sheathed flexible cables in accordance with IEC 60245-4;  
c) Cables and rubber insulated and sheathed flexible cables laid so that they are accessible but not in the vicinity of combustible materials and where the risk of mechanical damage is prevented;  
d) Conductor arrangement consisting of single-core non-sheathed cables of suitable type of construction (e.g. special rubber-insulated cables in accordance with IEC 60XXX ¹, rated voltage $U_{0}/U$ at least 1,8/3 kV or equivalent).  
An arrangement of cables and insulated conductors which could burn out without endangering their environment (e.g. cables in ground) is considered as equivalent to inherently short-circuit proof and inherently earth-fault-proof wiring with regard to safety." |

¹ In preparation.
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| Germany | 521.13 | In Germany the following additional requirements apply:

521.13 Accessories

Boxes and enclosures for accessories, e.g. connecting boxes for housing terminals, socket-outlets or switches shall comply with the requirements of EN 60670.

Boxes and enclosures intended to be installed in concrete or in hollow walls, shall have the following markings according to EN 60670-1 on the boxes and enclosures or provided by the manufacturer on the smallest package unit or in the instructions of the manufacturer:
- for use in concrete: symbol 90 °C;
- for use in hollow walls: symbol H.

GP-enclosures according to EN 60670-24 (under preparation) are not allowed to be installed in Germany.

| Germany | 521.6 | Socket outlet-systems which accept the simultaneous connection of more than one plug in the interface of one socket outlet are not allowed in Germany.

In Germany and the Netherlands in the case of basic-insulated conductors in conduit systems, cable trunking systems and cable ducting systems, only the conductors of one main circuit, including the auxiliary circuits associated with this main circuit, may be laid in conduit or in single-channel trunking or in one duct of a multi-channel trunking, except in electrical and enclosed operating areas. The uncut conductors of several circuits may, however, be fed through common through-run boxes.
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| 521.7          | In Germany the following additional requirements are applicable:  
under certain circumstances, for ease of installation, the conductor may be  
Class 5 to EN 60228, in which case the designatory suffix under HD 361 is  
given by "-K".  
The use of a Class 5 conductor designated "-K" does not indicate that the cable  
is suitable for repeated flexing.  
Flexible cables or cords (except for those heavy duty types used as fixed  
installations in temporary buildings) should not be used as fixed wiring unless  
contained in an enclosure affording mechanical protection, except when used  
as the final connection to fixed equipment. In which case they should be of, at  
least, the 'ordinary' type.  
Flexible cables or cords should not be placed under carpets or other floor  
coverings, where there is  
a) any risk of thermal insulating effects, leading to excessive temperature  
ris (see 5.3.1, a));  
b) any risk of damage due to furniture or equipment resting on them or traffic  
passing over them.  
When flexible cables are required for use outdoors, whether of temporary or  
permanent usage, reference should be made to Table 2A and 2B of this HD to  
determine their suitability for such usage.  
PVC flexible cables or cords are unsuitable for permanent use outdoors. Neither  
should those that have a temporary designation be used in that manner  
outdoors in adverse conditions, e.g. at temperatures below those given in  
Table 4A, column 11.  
In the case of soft soldered joints or terminations the limiting temperature for the  
conductor under short circuit conditions is reduced to 160 °C. Account of this  
limitation should be taken in selecting and operating cables.  
Tinned copper conductors should not be used at temperatures above 200 °C  
because of the risk of mutual adhesion.  
Where the limiting temperature given in Column 10 of Tables 3A, 3B, 4A and 4B  
is such that the temperature of the surface of the cable is liable to exceed 50 °C,  
the cable should be so located or guarded as to prevent contact of persons or  
animals therewith. Cable surface temperatures above this can cause involuntary  
reaction in the event of contact with exposed skin. Account should be taken of  
these possibilities in the selection and use of cables.  
In Germany, in cable tunnels, cable ducting and other places with increased  
density of installed cables the installation of fire detectors sensitive to heat  
radiation and smoke is required. In extended wiring system installations the  
possibility to use mobile fire extinguishers is required. The use of a stationery  
fire extinguisher installation is recommended in case of extended wiring  
systems to which gaining access is difficult. In cable tunnels every 100 m a  
partition as fire resisting section should be provided and every cable breaking  
through should be sealed by a suitable and agreed fire resisting provision.  
Accessible cable tunnels and ducts shall be erected with a sufficient number of  
possibilities for gaining access in case of fighting a fire hazard, e.g. by easy  
removable covers, and devices for smoke removal shall be provided. Where fire  
protection seals with an automatic closing function and fire resisting capability  
are applied such seals shall be activated at once in case of a fire hazard. |
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<td>522.4.1</td>
<td>In Germany, in hollow wall installations boxes and enclosures with a protection degree not less than IP30 shall be used.</td>
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<td>522.8.1.1</td>
<td>In Germany the following additional requirements apply: Add the following text: The tension applied to a cable should not exceed the values of tensile stress per conductor given below. This is subject to a total maximum tensile force of 1 000 N unless otherwise agreed by the cable manufacturer. 50 N/mm² for non flexible cables during installation. 15 N/mm² for flexible cables, under static tensile stress and for non flexible cables in service in fixed circuits. In circumstances where a stress exceeding the above values would result, a separate stress bearing member or device should be used. The method of attaching such a member or device to the cable should be such that the cable is not damaged. In circumstances where flexible cables are under dynamic stress (including those due to inertia, e.g. reeling drums) the permissible tensions or fatigue life should be agreed between the design engineer and the cable manufacturer. Cables which are installed vertically, without intermediate support, which are inaccessible and unlikely to be moved or disturbed, should be supported at the top of the run such that the internal radius of the resultant bend is not less than the appropriate minimum bending radius for normal use according to Table 6(a), or for fixed installation according to Tables 6(b) and 6(c). The unsupported vertical length of such runs should not exceed 5 m. The rated voltage of a cable is the reference voltage for which the cable is designed and which serves to define the electrical tests. The rated voltage is expressed by the combination of two values $U_o/U$, expressed in volts: $U_o$ being the r.m.s. value between any insulated conductor and 'earth' (metal covering of the cable or the surrounding medium); $U$ being the r.m.s. value between any two phase conductors of a multicore cable or of a system of single core cables. In an alternating current system, the rated voltage of a cable shall be at least equal to the nominal voltage of the system for which it is intended. This condition applies both to the value $U_o$ and to the value $U$. In a direct current system, the nominal voltage of the system shall be not higher than 1,5 times the rated voltage of the cable. NOTE The operating voltage of a system may permanently exceed the nominal voltage of such a system by 10 %. In Germany the standards DIN 18015-3 and DIN 1053-1 have to be considered.</td>
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