



SLOVENSKI STANDARD SIST HD 60364-7-705:2007

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Low-voltage electrical installations -- Part 7-705: Requirements for special installations or locations - Agricultural and horticultural premises

iTeh STANDARD PREVIEW

Errichten von Niederspannungsanlagen -- Teil 7-705: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art -- Elektrische Anlagen von landwirtschaftlichen und gartenbaulichen Betriebsstätten

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Installations électriques basse tension -- Partie 7-705: Exigences pour les installations ou emplacements spéciaux - Etablissements agricoles et horticoles

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English version

**Low-voltage electrical installations -
Part 7-705: Requirements for special installations or locations -
Agricultural and horticultural premises
(IEC 60364-7-705:2006, modified)**

Installations électriques basse tension -
Partie 7-705: Exigences
pour les installations
ou emplacements spéciaux -
Etablissements agricoles et horticoles
(CEI 60364-7-705:2006, modifiée)

Errichten von Niederspannungsanlagen -
Teil 7-705: Anforderungen
für Betriebsstätten, Räume
und Anlagen besonderer Art -
Elektrische Anlagen
von landwirtschaftlichen
und gartenbaulichen Betriebsstätten
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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).

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, 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: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 64/1527/FDIS, future edition 2 of IEC 60364-7-705, prepared by IEC TC 64, Electrical installations and protection against electric shock, was submitted to the IEC-CENELEC parallel vote.

A draft amendment, prepared by SC 64A, Protection against electric shock, 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 60364-7-705 on 2006-10-01.

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The following dates were fixed:

- latest date by which the existence of the HD has to be announced at national level (doa) 2007-04-01
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- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2009-10-01

Annexes ZA and ZB have been added by CENELEC.

In this standard, the common modifications to the International Standard are indicated by a vertical line in the left margin of the text.

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Introduction

The requirements of this part of HD 60364 supplement, modify or replace certain of the general requirements contained in Parts 1 to 6 of HD 60364.

The clause numbering appearing after 705 refers to the corresponding parts or clauses of HD 60364, Parts 1 to 6. Numbering of clauses does not, therefore, necessarily follow sequentially. Numbering of figures and tables takes the number of this part followed by a sequential number.

The absence of reference to a part or a clause means that the general requirements contained in Parts 1 to 6 of HD 60364 are applicable.

For products used in agricultural and horticultural premises presenting risk of hazardous atmospheres due to combustible gas and/or dust, the EN 60079 series and the EN 61241 series apply.

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705.11 Scope

The requirements of this part of HD 60364 apply to fixed electrical installations inside and outdoors of agricultural and horticultural premises. Some of the requirements are also applicable to other locations that are in common buildings belonging to the agricultural and horticultural premises.

Rooms, locations and areas for household applications and similar are not covered by this standard.

If some of the special requirements of Part 7-705 are also applicable for residences and other locations in such common buildings this is stated in the normative text.

705.12 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.

EN 60309-1, *Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements* (IEC 60309-1)

EN 60309-2, *Plugs, socket-outlets and couplers for industrial purposes – Part 2: Dimensional interchangeability requirements for pin and contact-tube accessories* (IEC 60309-2)

EN 60335-2-71, *Household and similar electrical appliances – Safety – Part 2-71: Particular requirements for electrical heating appliances for breeding and rearing animals* (IEC 60335-2-71, modified)

HD 384.5.51, *Electrical installations of buildings – Part 5- 51: Selection and erection of electrical equipment – Common Rules* (IEC 60364-5-51, modified)

HD 384.5.52, *Electrical installations of buildings – Part 5- 52: Selection and erection of electrical equipment – Wiring systems* (IEC 60364-5-51, modified)

HD 384.5.551, *Electrical installations of buildings – Part 5- 551: Selection and erection of electrical equipment – Other equipment – Low-voltage generating sets*

EN 60598 (all parts), *Luminaires*

EN 60598-2-24, *Luminaires – Part 2-24: Particular requirements – Luminaires with limited surface temperatures* (IEC 60598-23-24, modified)

EN 61386-21, *Conduit systems for cable management – Part 21: Particular requirements – Rigid conduit systems* (IEC 61386-21)

IEC 60364-5-53, *Electrical installations of buildings – Part 5-53: Selection and erection of electrical equipment – Isolation, switching and control*

IEC 60364-5-55, *Electrical installations of buildings – Part 5-55: Selection and erection of electrical equipment – Other equipment*

IEC 60884-1, *Plugs and socket-outlets for household and similar purposes – Part 1: General requirements*

IEC 61084-2-1, *Cable trunking and ducting systems for electrical installations – Part 2: Particular requirements – Section 1: Cable trunking and ducting systems intended for mounting on walls or ceilings*

705.20 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

705.20.1

agricultural and horticultural premises

rooms, locations or areas where

- livestock are kept;
- feed, fertilizers, vegetable and animal products are produced, stored, prepared or processed;
- plants are grown, such as greenhouses.

NOTE In agricultural and horticultural premises special requirements for the selection and erection of electrical equipment apply due to special external influences, e.g. influence of moisture, dust, aggressive chemical vapours, acids or salts on electrical equipment. In addition an increased fire risk may exist due to the presence of highly flammable substances. Agricultural and horticultural premises include, for example:

- housing for animals such as cattle, pigs, horses, sheep, goats and chicken-houses including adjacent rooms (e.g. feed processing locations, milking-machine locations, milk-storage rooms);
- barns, stores and storerooms for hay, straw, feed, fertilizers, grain, potatoes, beets, vegetables, fruits, ornamental plants, fuels, greenhouses;
- locations where agricultural and horticultural products are produced and prepared and processed commercially and/or in bulk (drying, stewing, pressing out, fermenting, butchering, meat processing etc.).

705.20.2

residences and other locations belonging to agricultural and horticultural premises

residences and other locations which have a conductive connection to the agricultural and horticultural premises by either protective conductors of the same installation or by extraneous-conductive-parts

NOTE 1 Examples of other locations includes offices, social rooms, machine-halls, workrooms, garages, and shops.

NOTE 2 Extraneous-conductive-parts are not part of the electrical installation but are liable to introduce a dangerous electrical potential (see definition IEC 826-11-03 of IEC 60050-826).

NOTE 3 Examples of conductive connections are metal-pipe systems, protective conductors or metal sheaths of the same electrical wiring system.

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705.20.3

high-density livestock rearing

breeding and rearing of livestock for which the use of automatic systems for life support is necessary

NOTE 1 Examples of automatic life support systems are those for ventilation, feeding and air-conditioning.

NOTE 2 Examples of high density rearing of livestock include: piggeries, chicken-houses, inland water fishery and artificial lake fish production.

705.20.4

arrangements for livestock keeping

buildings and rooms (housing for animals), cages, runs or other containers used for continuous accommodation of livestock

705.4.41 Protection against electric shock

705.411 Protective measure: automatic disconnection of supply

705.411.1 General

Additional paragraph:

In circuits, whatever the type of earthing system, the following disconnection device shall be provided:

- in final circuits supplying socket-outlets with rated current up to 32 A, a RCD with $I_{\Delta n}$ not exceeding 30 mA;
- in final circuits supplying socket-outlets with rated current more than 32 A, a RCD with $I_{\Delta n}$ not exceeding 100 mA;
- in all other circuits RCDs with $I_{\Delta n}$ not exceeding 300 mA.

NOTE Where improved continuity of service is required, RCDs with a rated residual operating current up to 300 mA should be of the S type or time delayed.

705.411.4.3

Additional paragraph:

Where the electrical installation is connected to a TN system, there shall be separate neutral and protective conductors downstream from the origin of the installation. This requirement applies also to residences and other locations belonging to agricultural or horticultural premises according to the definition of 705.20.2.

705.414 Protective measure: extra-low-voltage provided by SELV and PELV

705.414.4 Requirements for SELV and PELV circuits

705.414.4.5 Where the protective measure SELV or PELV is applied, whatever the nominal voltage, basic protection (protection against direct contact) shall be provided by one of the following measures:

- barriers or enclosures affording a degree of protection of at least IP XXB or IP 2X, or
- insulation capable of withstanding a test voltage of 500 V a.c. r.m.s for 1 min.

705.415.2 Additional protection: supplementary protective equipotential bonding

705.415.2.3 In locations intended for livestock, supplementary bonding shall connect all exposed-conductive-parts and extraneous-conductive-parts that can be touched by livestock. Where a metal grid is laid in the floor, it shall be included within the supplementary bonding of the location (see figures of Annex A).

Extraneous-conductive-parts in, or on, the floor e.g. concrete reinforcement in general or reinforcement of cellars for liquid manure, shall be part of the supplementary equipotential bonding.

It is recommended that spaced floors made of prefabricated concrete elements be part of the equipotential bonding (see Figure A.3). The supplementary equipotential bonding and the metal grid, if any, shall be erected so that it is durably protected against mechanical stresses and corrosion.

705.4.42 Protection against thermal effects

705.422 Measures for protection against fire

Additional subclauses:

705.422.6 Electrical heating appliances used for the breeding and rearing of livestock shall comply with EN 60335-2-71 and shall be fixed mounted in an appropriate position in order to avoid:

- any risk of burns to livestock, and
- any risk of fire by ignition of combustible material.

Radiant heaters shall be installed at a distance of at least 0,5 m from livestock and from combustible material unless a greater distance is specified by the manufacturer of the apparatus in the instructions for use.

705.422.7 For fire protection purposes, RCDs shall be installed with a rated residual operating current not exceeding 300 mA. RCDs shall disconnect all live conductors. Where improved continuity of service is required, RCDs not protecting socket-outlets shall be of the S type or have a time delay.

NOTE The protection of the final circuits by RCD required according to 705.411.1 is also effective for protection against fire.

705.422.8 In locations where a fire risk exists conductors of circuits supplied from extra-low-voltage shall be protected either by barriers or enclosures affording a degree of protection according to IP XXD or IP 4X or in addition to their basic insulation by an enclosure of insulating material.

NOTE For example cables of the type H07RN-F for outdoor use are in compliance with this requirement.

705.4.44 Protection against voltage disturbances and electromagnetic disturbances

705.443 Protection against overvoltages of atmospheric origin or due to switching

Additional note:

NOTE Where electronic equipment is used, it is recommended to provide protective measures against lightning according to EN 62305 series and against overvoltages according to Clause 443 of HD 60364-4-44 and Clause 534 of IEC 60364-5-53.

705.5.51 Selection and erection of electrical equipment – Common rules

705.512 Operational conditions and external influences

705.512.2 External influences

Additional paragraphs:

In agricultural or horticultural premises, electrical equipment shall have a minimum degree of protection of IP44, when used under normal conditions. Where equipment of IP 44 rating is not available, it shall be placed in an enclosure complying with IP 44.

Socket-outlets shall be installed in a position where they are unlikely to come into contact with combustible material.

Where there are conditions of external influences >AD4, >AE3 and/or >AG1, socket-outlets shall be provided with the appropriate protection.

Protection may also be provided by the use of additional enclosures or by installation in building recesses.

These requirements do not apply to residential locations, offices, shops and locations with similar external influences belonging to agricultural and horticultural premises where, for socket-outlets IEC 60884-1 applies. <https://standards.iteh.ai/catalog/standards/sist/089ebf0-7ad4-4ec2-83a0-362842a9d8ee/sist-hd-60364-7-705-2007>

Where corrosive substances are present e.g. in dairies, byres, the electrical equipment shall be adequately protected.

705.513 Accessibility

705.513.2 Accessibility by livestock

Electrical equipment generally shall be inaccessible to livestock. Equipment that is unavoidably accessible to livestock such as equipment for feeding and basins for watering, shall be adequately constructed and installed to avoid damage by, and minimize the risk of injury to, livestock.

705.514 Identification

705.514.5 Diagrams

705.514.5.3 The following documentation shall be provided and handed to the user of the installation:

- a plan indicating the location of all electrical equipment, and
- the routing of all concealed cables, and
- a single line distribution diagram, and
- an equipotential bonding diagram indicating locations of bonding connections.