SLOVENSKI STANDARD
SIST HD 60364-7-721:2009

01-december-2009

Nizkonapetostne elektriļ ne inģtalacije - 7-721. del: Zahteve za posebne inģtalacije ali lokacije - Elektriļ ne inģtalacije v poļ itniģkih prikolicah in avtodomih (IEC 60364-7-721:2007, spremenjen)

Low-voltage electrical installations -- Part 7-721: Requirements for special installations or locations - Electrical installations in caravans and motor caravans

Errichten von Niederspannungsanlagen - Teil 7-721: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art - Elektrische Anlagen in Caravans und Motorcaravans

Installations électriques à basse tension -- Partie 7-721: Exigences pour les installations ou emplacements spéciaux - Installations électriques dans les caravanes et caravanes à moteur

Ta slovenski standard je istoveten z: HD 60364-7-721:2009

ICS:

43.100	Osebni avtomobili. Bivalne prikolice in lahke prikolice	Passenger cars. Caravans and light trailers
91.140.50	Sistemi za oskrbo z elektriko	Electricity supply systems

SIST HD 60364-7-721:2009 en,fr,de

HARMONIZATION DOCUMENT

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

HD 60364-7-721

September 2009

ICS 91.140.50; 29.020

Supersedes HD 384.7.754 S1:2005

English version

Low-voltage electrical installations - Part 7-721: Requirements for special installations or locations - Electrical installations in caravans and motor caravans

(IEC 60364-7-721:2007, modified)

Installations électriques à basse tension - Partie 7-721: Exigences pour les installations ou emplacements spéciaux - Installations électriques dans les caravanes et caravanes à moteur (CEI 60364-7-721:2007, modifiée)

Errichten von Niederspannungsanlagen - Teil 7-721: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art - Elektrische Anlagen in Caravans und Motorcaravans (IEC 60364-7-721:2007, modifiziert)

This Harmonization Document was approved by CENELEC on 2009-04-01. 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, 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

Ref. No. HD 60364-7-721:2009 E

Foreword

The text of the International Standard IEC 60364-7-721:2007, prepared by IEC TC 64, Electrical installations and protection against electric shock, together with common modifications 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 and was approved by CENELEC as HD 60364-7-721 on 2009-04-01.

This Harmonization Document supersedes HD 384.7.754 S1:2005.

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

The following dates were fixed:

– latest date by which the existence of the HD has to be announced at national level	(doa)	2009-10-01
– latest date by which the HD has to be implemented at national level by publication of a harmonized national standard or by endorsement	(dop)	2010-04-01
– latest date by which the national standards conflicting with the HD have to be withdrawn	(dow)	2012-04-01

For this Harmonization Document the informative Annex D of IEC 60364-7-721:2007 shall be disregarded and has been replaced by the normative Annex ZA, *Special national conditions*.

Annex ZA has been added by CENELEC.

Introduction

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

The clause numbering of Part 7-721 follows the pattern and corresponding references of HD 60364. The numbers following the particular number of Part 7-721 are those of the corresponding parts or clauses of HD 60364.

The absence of reference to a part or a clause means that the corresponding general requirements of HD 60364 are applicable.

721.1 Scope

The particular requirements of this part of HD 60364 apply to the electrical installation of caravans and motor caravans.

They apply to those electrical circuits and equipment intended for the use of the caravan for habitation purposes.

They do not apply to those electrical circuits and equipment for automotive purposes.

They do not apply to the electrical installations of mobile homes, residential park homes and transportable units.

NOTE 1 For mobile homes and residential park homes the general requirements apply.

NOTE 2 For transportable units see HD 60364-7-717.

NOTE 3 For the purpose of this standard, caravans and motor caravans are referred to as “caravans”

NOTE Z1 For extra low-voltage d.c. 12 V installations, EN 1648-1 and EN 1648-2 apply.

The particular requirements of some parts from the HD 60364-7 series may also apply to such installations in caravans, e.g. HD 60364-7-701.

721.2 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.

EN 50085 (all parts), *Cable trunking systems and cable ducting systems for electrical installations*

HD 472 S1:1989 + Corr. 2002, *Nominal voltages for low voltage public electricity supply systems* (IEC 60038:1983, mod.)

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 60332-1-2, *Tests on electric and optical fibre cables under fire conditions – Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW premixed flame* (IEC 60332-1-2)

EN 60335-1, *Household and similar electrical appliances – Safety – Part 1: General requirements* (IEC 60335-1, mod.)

EN 60335-2-29, *Household and similar electrical appliances – Safety – Part 2-29: Particular requirements for battery chargers* (IEC 60335-2-29)

HD 60364-5-51, *Electrical installations of buildings – Part 5-51: Selection and erection of electrical equipment - Common rules* (IEC 60364-5-51, mod.)

HD 60364-7 (all parts), *Low-voltage electrical installations – Part 7: Requirements for special installations or locations* (IEC 60364-7 all parts, mod.)

EN 60529, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529)

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

EN 61008-1, *Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules* (IEC 61008-1, mod.)

EN 61009-1, *Residual current operated circuit-breakers with integral overcurrent protection for household and similar uses (RCBOs) – Part 1: General rules* (IEC 61009-1, mod.)

EN 61386 (all parts), *Conduit systems for cable management* (IEC 61386 all parts)

EN 61558-2-6, *Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V – Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers* (IEC 61558-2-6)

EN ISO 11446, *Road vehicles – Connectors for the electrical connection of towing and towed vehicles – 13-pole connectors for vehicles with 12 V nominal supply voltage* (ISO 11446)

HD 22 (all parts), *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation*

ISO 1724, *Road vehicles – Connectors for the electrical connection of towing and towed vehicles – 7-pole connector type 12 N (normal) for vehicles with 12 V nominal supply voltage*

ISO 3732, *Road vehicles – Connectors for the electrical connection of towing and towed vehicles – 7-pole connector type 12 S (supplementary) for vehicles with 12 V nominal supply voltage*

ISO 6309, *Fire protection – Safety signs*

ISO 8820, *Road vehicles – Fuse-links*

721.3 Terms and definitions

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

721.3.1
leisure accommodation vehicle
unit of living accommodation for temporary or seasonal occupation that may meet the requirements for the construction and use of road vehicles

721.3.1.1
caravan
trailer leisure accommodation vehicle, used for touring, that meets the requirements for the construction and use of road vehicles

721.3.1.2
motor caravan
self-propelled leisure accommodation vehicle, used for touring, that meets the requirements for the construction and use of road vehicles

NOTE A motor caravan is either adapted from a series production vehicle, or designed and built on an existing chassis, with or without the driving cab, the accommodation being either fixed or dismountable.

721.3.1.3
mobile home
transportable leisure accommodation vehicle that includes means for mobility but does not meet the requirements for the construction and use of road vehicles

721.3.1.4
residential park home
a factory produced relocatable dwelling

721.31 Purposes, supplies and structure

721.313 Supplies

721.313.1.2 The nominal supply system voltage shall be selected from HD 472 S1:1989 + Corr. 2002.

The nominal a.c. supply voltage of the installation of the caravan shall not exceed 230 V single-phase, or 400 V three-phase.

The nominal d.c. supply voltage of the installation of the caravan shall not exceed 48 V.

721.4 Protection for safety

721.41 Protection against electric shock

721.411.2 Requirements for basic protection

721.41.B.2 Obstacles

Protection by obstacles shall not be used.

721.41.B.3 Placing out of reach

Protection by placing out of reach shall not be used.

721.41.C.1 Non-conducting locations

Protection by non-conducting location shall not be used.

NOTE This precludes the use of class 0 equipment.

721.41.C.2 Protection by earth-free local equipotential bonding

Protection by earth-free equipotential bonding shall not be used.

721.411.3.1.2 Protective equipotential bonding

Structural metallic parts that are accessible from within the caravan shall be bonded to the protective conductor.

721.413 Protective measure: electrical separation

Protection by electrical separation shall not be used, except for a shaver socket-outlet.

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

Any part of a caravan installation operating at extra-low voltage shall comply with the requirements of Clause 414.

For extra-low voltage d.c. power sources, the following standard voltages are generally applicable: 12 V, 24 V, 42 V and 48 V.

In exceptional cases, when a.c. extra-low voltage is required, the following standard voltages (rms) are permitted: 12 V, 24 V, 42 V and 48 V.

NOTE The requirements of Part 721 are also applicable to extra low-voltage d.c. installation. See Annex B for recommendations that may be applied in addition.

721.415.1 Additional protection: residual current protective devices

Add:

Where protection by automatic disconnection of supply is used, a residual current device with a rated residual operating current not exceeding 30 mA, complying with EN 60947-2, EN 61008-1 or EN 61009-1 breaking all live conductors, shall be provided having the characteristics specified in 415.1.1.

Each supply inlet shall be directly connected to its associated RCD.

NOTE This implies that there may not be any taps or junctions in the circuit.

721.43 Protection against overcurrent

721.43.1 Final circuits

Each final circuit shall be protected by an overcurrent protective device which disconnects all live conductors of that circuit.

721.5 Selection and erection of equipment

721.51 Common rules

721.510 Introduction

721.510.3 General

Where there is more than one electrically independent installation, each independent installation shall be supplied by a separate connecting device and shall be segregated in accordance with general rules.

721.512 Operational conditions and external influences

721.512.2 External influences

NOTE Consideration should be given to the foreseeable external influences to which the caravan will be subjected.

721.514 Identification

721.514.1 General

Instructions for use shall be provided with the caravan so that the caravan can be used safely.

The instructions shall comprise:

– a description of the installation;

– a description of the function of the RCD(s) and the use of the test button;

– a description of the function of the main isolating switch;

– the text of the instructions of Annex A.

If it is necessary to take precautions during user maintenance, appropriate details shall be given.

721.521 Types of wiring systems

721.521.2 The wiring system shall use one or more of the following:

a) insulated single-core cables, with flexible class 5 conductors, in conduit or trunking system;

b) insulated single-core cables, with stranded class 2 conductors (minimum of 7 strands); in conduit or trunking system;

c) sheathed flexible cables.

All cables shall as a minimum meet the requirements of EN 60332-1-2.

Conduit systems shall comply with the relevant parts of the EN 61386 series.

Cable trunking systems and cable ducting systems shall comply with the relevant parts of the EN 50085 series.

721.522 Selection and erection of wiring systems in relation to external influences

721.522.7 Vibration (AH)

721.522.7.1 As wiring systems will be subjected to vibration, every wiring system shall be protected against mechanical damage either by location or by additional protection. The following requirements shall be met:

– Precaution shall be taken to avoid mechanical damage due to sharp edges or abrasive parts.

– Cables passing through metalwork shall be protected by means of suitable bushes or grommets which are securely fixed in position.

721.522.8 Other mechanical stresses (AJ)

721.522.8.1.3 All cables, unless enclosed in rigid conduit, and all flexible conduit shall be supported at intervals not exceeding 0,4 m for vertical runs and 0,25 m for horizontal runs.

721.524 Cross-sectional areas of conductors

721.524.1 The cross-sectional area of every conductor shall be not less than 1,5 mm^2.

721.526 Electrical connections

721.526.1

Add:

Connections between cables or conductors shall only be made in connecting boxes or electrical equipment.

NOTE Connections also include junctions and taps.

721.528 Proximity of wiring systems to other services

721.528.2 Proximity to non-electrical services

721.528.2.1 No electrical equipment including wiring systems, except

a) ELV-equipment for gas-supply control,

b) cables running through a gas compartment,

shall be installed in any gas cylinder compartment.

ELV cables and electrical equipment may only be installed within the LPG cylinder compartment if the installation serves the operation of the gas cylinder (e.g. indication of empty gas cylinders) or is for use within the compartment. Such electrical installations and components shall be constructed and installed so that they are not a potential source of ignition.

Where cables have to run through such a compartment such cables shall be protected against mechanical damage by installation within conduit or duct passing through the compartment.

Where installed, this conduit or duct shall be able to withstand an impact equivalent to AG3 without visible physical damage.

721.53 Isolation, switching and control

721.536 Isolation and switching

721.536.2 Isolation

721.536.2.1.1 Each installation shall be provided with a main isolating switch which shall disconnect all live conductors and which shall be suitably placed for ready operation within the caravan. In an installation consisting of only one final circuit, the isolating switch may be the overcurrent protection device providing such a device meets the requirements for isolation.

721.536.2.1.1.1 A notice in durable material shall be permanently fixed in the vicinity of the main isolating switch inside the caravan, bearing the text shown in Annex A in the official language(s) of the country in which the caravan is to be sold for the first time, in indelible and easily legible characters.

721.543 Protective conductors

721.543.2 Types of protective conductors

721.543.2.1 Circuit protective conductors shall be incorporated in a multicore cable or in a conduit together with the live conductors.

721.55 Other equipment

721.55.1 Inlets

721.55.1.1 Any a.c. electrical inlet on the caravan shall be in compliance with EN 60309-2.

721.55.1.2 The inlet, if any, shall be installed

a) not more than 1,8 m above ground level, and

b) in a readily accessible position, and

c) have a minimum protection of IP44 with or without a connector engaged, and

d) the inlet shall not protrude significantly beyond the body of the caravan.

721.55.2 Accessories

721.55.2.1 Every low-voltage socket-outlet, other than a single socket-outlet, protected by a built-in electrical separation.

721.55.2.2 Every socket-outlet supplied at extra-low voltage shall have its voltage visibly marked.

721.55.2.3 Where an accessory is located in a position in which it is exposed to the effects of moisture it shall be constructed or enclosed so as to provide a degree of protection not less than IP44.

721.55.2.4 Each luminaire in a caravan shall preferably be fixed directly to the structure or lining of the caravan. Where a pendant luminaire is installed in a caravan, provision shall be made for securing the luminaire to prevent damage when the caravan is moved.

Accessories for the suspension of pendant luminaires shall be suitable for the mass suspended and the forces associated with vehicle movement.

721.55.2.5 A luminaire intended for dual voltage operation shall comply with the appropriate standard.

721.55.2.6 The means of connection to the caravan pitch socket-outlet shall comprise the following:

a) a plug complying with EN 60309-2; and

b) a flexible cord or cable
   - of 25 m (± 2 m) length,
   - of harmonized code designation H07RN-F or equivalent,
   - incorporating a protective conductor, with a colour identification according to HD 60364-5-51, Subclause 514.3,
   - with a cross-sectional area in accordance with Table 721A, and

c) a connector, if any, compatible with the appliance inlet installed under 721.55.1.1.

Table 721A – Cross-sectional areas of flexible cords and cables for caravan connection

Rated current A	Minimum cross-sectional area mm^2
16	2,5
25	4
32	6
63	16
100	35

The means of connection to the caravan pitch socket-outlet need not to be supplied with the caravan.