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Nizkonapetostne električne inštalacije - 7-717. del: Zahteve za posebne inštalacije ali lokacije - Premične ali prenosne enote

Low-voltage electrical installations - Part 7-717: Requirements for special installations or locations - Mobile or transportable units

Errichten von Niederspannungsanlagen - Errichten von Niederspannungsanlagen - Teil 7 -717: Anforderungen für Betriebsstätten, Räume und Anlagen besonderer Art - Ortsveränderliche oder transportable Baueinheiten

Installations électriques à basse tension - Partie 7-717: Règles pour les installations ou emplacements spéciaux - Unités mobiles ou transportables

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91.140.50 Sistemi za oskrbo z elektriko Electricity supply systems

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HARMONIZATION DOCUMENT

DOCUMENT D'HARMONISATION

HARMONISIERUNGSDOKUMENT

HD 60364-7-717

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Supersedes HD 60364-7-717:2004

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Low-voltage electrical installations - Part 7-717: Requirements for special installations or locations - Mobile or transportable units

(IEC 60364-7-717:2009, modified)

Installations électriques à basse tension - Partie 7-717: Règles pour les installations ou emplacements spéciaux - Unités mobiles ou transportables (CEI 60364-7-717:2009, modifiée)

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This Harmonization Document was approved by CENELEC on 2009-10-01. 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

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Foreword

The text of document 64/1675/FDIS, future edition 2 of IEC 60364-7-717, 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 the 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 60364-7-717 on 2009-10-01.

This Harmonization Document supersedes HD 60364-7-717:2004.

The main changes with respect to HD 60364-7-717:2004 are as follows:

– the scope has been improved, providing more detail;

– the content of Clause 717.41 has been updated following the new edition of HD 60364-4-41;

– clauses concerning protection by automatic disconnection of the supply and additional protection have been introduced;

– all figures have been updated.

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) 2010-10-01

- latest date by which the national standards conflicting with the HD have to be withdrawn (dow) 2012-10-01

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

For this Harmonization Document, the informative Annex A of IEC 60364-7-717:2009 shall be disregarded and has been replaced by the normative Annex ZA, *Special national conditions*.

Annex ZA has been added by CENELEC.

717 Mobile or transportable units

717.1 Scope

The particular requirements as specified in this part of HD 60364 are applicable to a.c. and d.c. installations for mobile or transportable units.

For the purposes of this part, the term "unit" refers to a vehicle and/or mobile or transportable structure in which all or part of an electrical installation is contained.

Units are either of the mobile type (using wheels), for example self-propelled or towed, or of the transportable type, for example container or cabin placed on base frame.

Examples are units for television and broadcasting, medical services, advertising, fire fighting, using special information technology, units for disaster relief, catering units and the like.

The requirements of this part also apply where two or more units are connected together to form a single electrical installation (see 717.551.6 and 717.551.7).

The requirements are not applicable to

- electrical circuits and equipment for automotive purposes,
- generating sets,
- units covered by other parts of Part 7 (e.g. caravan and motor-caravan),
- pleasure craft (see IEC 60092-507),
- mobile machinery in accordance with EN 60204-1,
- traction equipment of electric vehicles,
- mobile or transportable homes, offices and the like for extended use at the same location (see general rules of HD 60364).

Where applicable, additional requirements as laid down in other clauses of Part 7 are to be taken into consideration, e.g. for showers, medical locations, etc.

717.2 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.

HD 21.3 S3:1995, *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 3: Non-sheathed cables for fixed wiring (*IEC 60227-3:1993, mod.)

HD 22.4, *Cables of rated voltages up to and including 450/750 V and having cross-linked insulation -- Part 4: Cords and flexible cables*

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

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 pre-mixed flame* (IEC 60332-1-2)

HD 60364-4-41:2007, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock* (IEC 60364-4-41:2005, mod.)

HD 60364-5-551, *Low-voltage electrical installations -- Part 5-55: Selection and erection of electrical equipment - Other equipment -- Clause 551: Low-voltage generating sets* (IEC 60364-5-55/A2 (Clause 551))

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

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

IEC 61084 (all parts), *Cable trunking and ducting systems for electrical installations*

EN 61140, *Protection against electric shock – Common aspects for installation and equipment* (IEC 61140)

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

EN 61386-22, *Conduit systems for cable management – Part 22: Particular requirements – Pliable conduit systems* (IEC 61386-22)

EN 61386-23, *Conduit systems for cable management – Part 23: Particular requirements – Flexible conduit systems* (IEC 61386-23)

EN 61557-8, *Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 8: Insulation monitoring devices for IT systems* (IEC 61557-8)

EN 61557-9, *Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures – Part 9: Equipment for insulation fault location in IT systems* (IEC 61557-9)

717.30 Assessment of general characteristics

717.31 Purposes, supplies and structure

717.312 Conductor arrangement and system earthing

717.312.2 Types of system earthing

Add the following:

NOTE Where the designation TN or TT or IT is used in this Part 7-717, it means only that the protective principles of these systems apply. If a connection to the earth electrode is not provided, a connection to the conductive enclosure or to the protective bonding of the unit may be sufficient.

717.312.2.1 TN Systems

Add the following:

The use of the TN-C system is not permitted inside any unit.

717.313 Supplies

Add the following:

One or more of the following methods shall be used to supply a unit:

a) connection to a low-voltage generating set in accordance with HD 60364-5-551 (see Figures 717.1 and 717.2);

b) connection to a fixed electrical installation in which the protective measures are effective (see Figure 717.3);

c) connection through means providing simple separation, in accordance with EN 61140, from a fixed electrical installation (see Figures 717.4, 717.5, 717.6 and 717.7);

d) connection through means providing electrical separation from a fixed electrical installation (see example in Figure 717.8).

NOTE 1 In cases a), b) and c), an earth electrode may be provided.

NOTE 2 In the case of Figure 717.4, an earth electrode may be necessary for protective purposes (see 717.411.6.2b, second dash).

NOTE 3 Simple separation or electrical separation is appropriate, for example, where information technology equipment is used in the unit or where a reduction of electromagnetic influences is necessary, or if high leakage currents are to be expected (use of frequency converters), and/or if the supply of the unit comes from alternative supply systems (as is the case in disaster management).

The sources, means of connection or separation may be within the unit.

NOTE 4 Where there is a potential hazard due to moving the unit while connected to an external installation, it is recommended to equip the unit with an electric interlock, warning, alarm or other appropriate means to reduce the risk.

NOTE 5 For the purpose of this Part 7-717, power inverters or frequency converters that are supplied by the low-voltage vehicle electrical system or auxiliary drive systems of the combustion engine are also considered as low-voltage generating sets.

Power inverters or frequency converters shall include at least simple separation where both a d.c. system and a.c. system are earthed.

Power inverters or frequency converters shall include galvanic separation in cases where both DC polarity and AC neutral point are connected to the earth.

717.4 Protection for safety

717.41 Protection against electric shock

717.411 Protective measure: automatic disconnection of supply

Add the following:

a) For a supply in accordance with 717.313 a), only TN and IT systems are permitted. Protection shall be provided by automatic disconnection of supply, and

   – in a TN system, 717.411.4.1 applies;

   – in an IT system, 717.411.6.2 applies.

b) For a supply in accordance with 717.313 b), automatic disconnection of the supply shall be provided by a residual current protective device, with a rated residual operating current not exceeding 30 mA.

c) In all cases a) to d) of 717.313, any equipment installed between the source of supply and the protective devices providing automatic disconnection of the supply within the unit, including these protective devices themselves, shall be protected by use of class II equipment or by equivalent insulation.

717.411.3 Requirements for fault protection

717.411.3.1 Protective earthing and protective equipotential bonding

717.411.3.1.2 Protective equipotential bonding

Add the following:

Accessible conductive parts of the unit, such as the chassis, shall be connected through the protective bonding conductors to the main earthing terminal within the unit.

The protective bonding conductors shall be finely stranded.

NOTE Type H07V-K in accordance with HD 21.3 is appropriate.

717.411.4 TN system

717.411.4.1

Add the following:

Where a TN system is used within a unit with a conductive enclosure and supplied according to 717.313 a) or c), this enclosure shall be connected to the neutral point or, if not available, a line conductor (see Figures 717.1, 717.2 and 717.6).

For a unit without a conductive enclosure, the exposed-conductive-parts of the equipment inside the unit shall be connected by means of a protective conductor to the neutral point or, if not available, to a line conductor.

717.411.6 IT system

717.411.6.2

Add the following:

Where an IT system is used within a unit with a conductive enclosure, connection of the exposed-conductive-parts of the equipment to the conductive enclosure is necessary.

For a unit without a conductive enclosure, the exposed-conductive-parts inside shall be connected to one another and to a protective conductor.

An IT system shall be provided by an isolating transformer or a low voltage generating set, with an insulation monitoring device according to EN 61557-8 or an insulation fault location system according to EN 61557-9, both without automatic disconnection of the supply in case of the first fault and without a need of connection to an earthing installation (see Figure 717.7); In the case of two faults on different line conductors the requirements for disconnection of supply according to 411.6.4 shall apply.

717.413 Protective measure: electrical separation

Replace the whole subclause by:

A transformer providing electrical separation, e.g. in accordance with HD 60364-4-41, 413.1.3 or HD 60364-4-41, C.3, only in the following cases:

- an insulation monitoring device is installed, providing automatic disconnection of the supply in case of a first fault between live parts and the frame of the unit (see Figure 717.5); or

- a residual current device and an earth electrode are installed to provide automatic disconnection in the case of failure in the transformer providing the electrical separation (see Figure 717.4). Each equipment used outside the unit shall be protected by a separate residual current protective device with rated residual current not exceeding 30 mA.

717.415 Additional protection

717.415.1 Additional protection: residual current protective devices (RCDs)

Add the following:

Additional protection by residual current protective devices with a rated residual operating current not exceeding 30 mA is necessary for all socket-outlets intended to supply current-using equipment outside the unit, with the exception of socket-outlets which are supplied from circuits with protection by

– SELV, or

– PELV, or

– electrical separation.

717.43 Protection against overcurrent

717.431 Requirements according to the nature of the circuits

717.431.1 Protection of line conductors

Add the following:

Where the supply is in accordance with 717.313 a) or c), and where a line conductor is connected to the conductive enclosure of the unit, no overcurrent protective device is required in this line conductor.

717.5 Selection and erection of electrical equipment

717.51 Common rules

717.514 Identification

Add the following:

A permanent notice of durable material shall be fixed to the unit in a prominent position, preferably adjacent to the supply inlet connector. The notice should state in clear and unambiguous terms the following:

– the type of supply which may be connected to the unit;

– the voltage rating of the unit;

– the number of phases and their configuration;

– the on-board earthing arrangement;

– the maximum power requirement of the unit.

For socket-outlets individually protected by the protective measure electrical separation (see 413.1.2), a durable indication shall be located adjacent to these socket-outlets stating that only one item of current-using electrical equipment shall be connected to each socket-outlet.

717.52 Wiring systems

Add the following:

717.52.1 Cables H07RN-F according to HD 22.4 or cables of equivalent design having a minimum cross-sectional area of 2,5 mm² Cu shall be used for connecting the unit to the supply. The flexible cable shall enter the unit by an insulating inlet in such a way as to minimize the possibility of any insulation damage or fault which might energize the exposed-conductive-parts of the unit. The cable sheath shall be firmly gripped by the cable gland of the connector or anchored to the unit during operation to prevent stress on the termination.

717.52.2 The wiring systems shall be installed using one or more of the following:

a) insulated single-core cables, with flexible conductors or with stranded conductors (minimum of 7 strands), in

   - non-metallic conduits, or
   - non-metallic cable trunking systems, or
   - non-metallic cable ducting systems;

b) sheathed flexible cables.

All cables shall, as a minimum, meet the requirements of HD 21.3 and EN 60332-1-2.

Conduits shall comply with EN 61386-21, EN 61386-22 or EN 61386-23.

Trunking and ducting systems in accordance with IEC 61084 may be used.

717.55 Other equipment

717.551.6 Additional requirements for installations where the generating set provides a supply as a switched alternative to the normal supply to the installation

Add the following:

Units with different power supply systems and different earthing systems shall not be interconnected.

717.551.7 Additional requirements for installations where the generating set may operate in parallel with other sources including systems for distribution of electricity to the public

Add the following:

Units with different power supply systems and different earthing systems shall not be interconnected.

717.55.1 Plugs and socket-outlets shall comply with EN 60309-1, EN 60309-2 or IEC 60884-1, except those dedicated for special equipment, such as broadcasting equipment where combined connectors for information signals and power supply are used.

Connecting devices used to connect the unit to the supply shall comply with EN 60309-1 or EN 60309-2 when interchangeability is required, and with the following requirements:

– plugs shall have an enclosure of insulating material;

– plugs and sockets-outlets shall afford a degree of protection of not less than IP44, if used outside;

– appliance inlets with their enclosures shall provide a degree of protection of at least IP55;

- the inlet (with “male” contacts) shall be situated on the unit.

717.55.2 Socket-outlets located outside the unit shall be provided, by construction or by installation, with an enclosure affording a degree of protection not less than IP55.

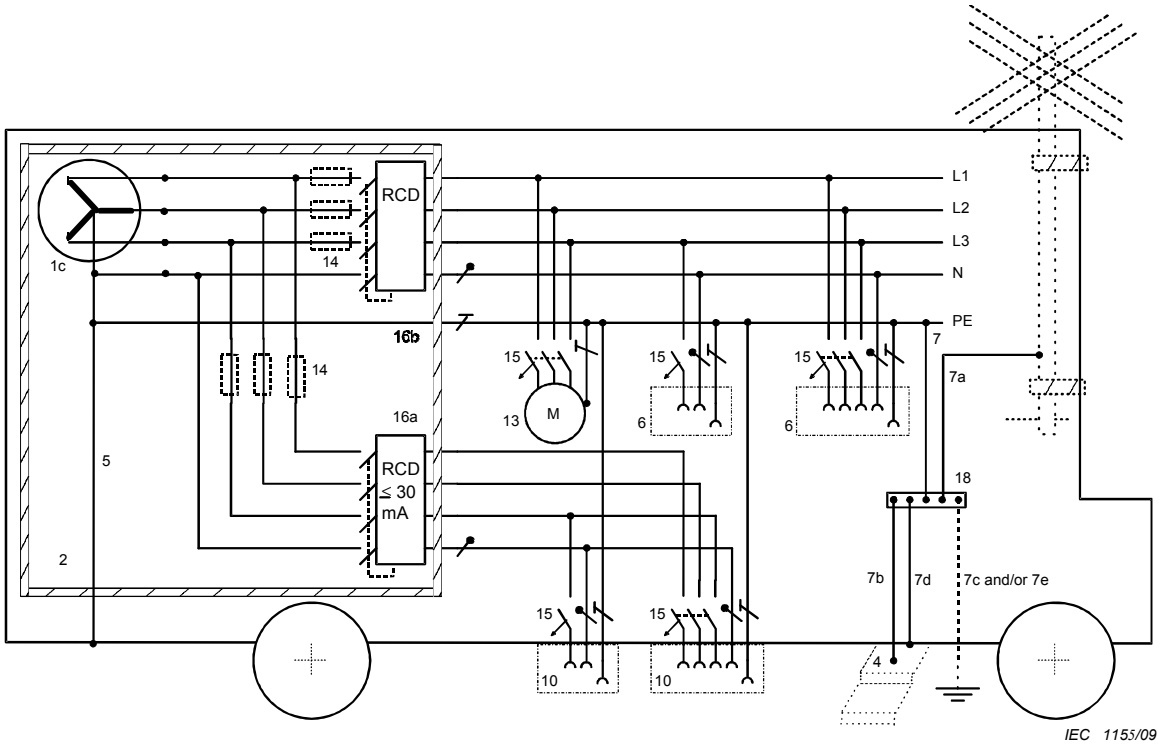
717.55.3 Any generating sets able to produce voltages other than SELV or PELV, mounted in the unit, shall automatically be switched off in case of an accident to the unit (e.g. event causing the release of air-bags). If this requirement is difficult to implement an emergency switch, easily accessible, shall be installed.

717.62.2.1

Add the following:

For mobile units, it is recommended to verify the unit at least once every 12 months.

For transportable units, it is recommended to verify the unit at least once every 2 years.



NOTE Protection by automatic disconnection of supply by residual current protective devices (RCD).

Figure 717.1 – Example of connection to a class I or class II low-voltage generating set located inside the unit with or without an earth electrode

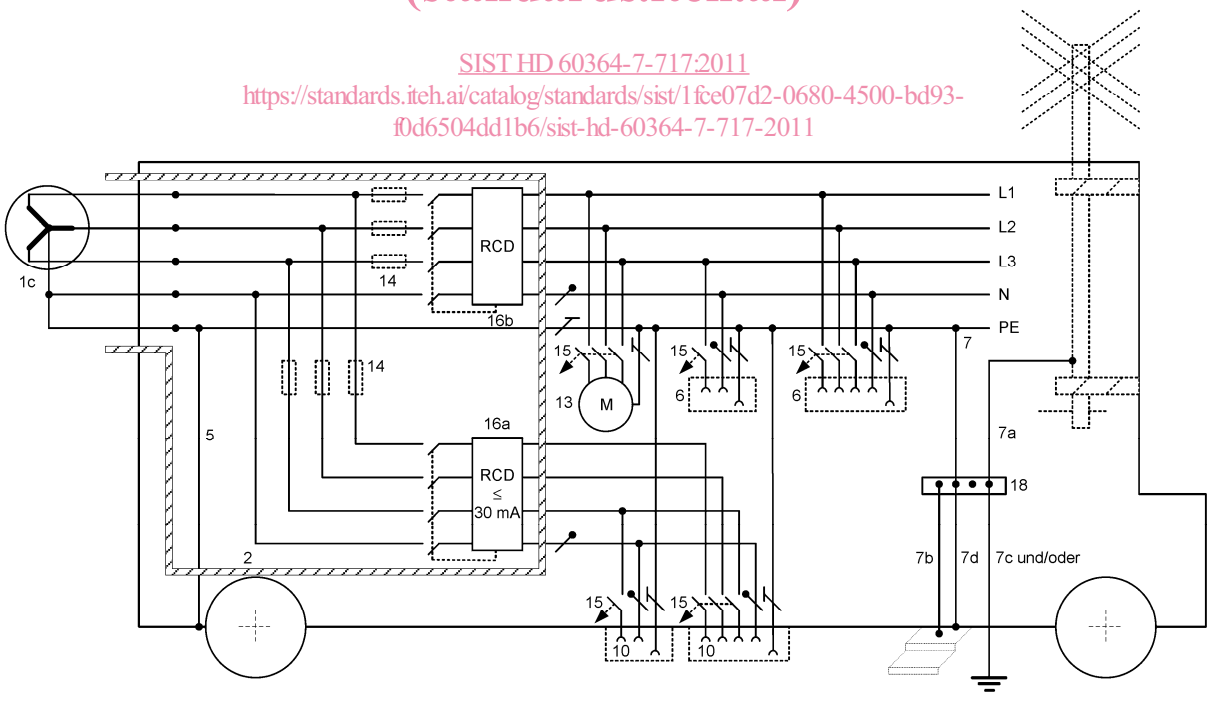


Figure 717.2 – Example of connection to a Class II low voltage generating set located outside the unit