



SLOVENSKI STANDARD

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Nadomešča:

SIST HD 384.5.56 S1:2000

Nizkonapetostne električne inštalacije - 5-56. del: Izbira in namestitvev električne opreme - Varnostno napajanje

Low-voltage electrical installations -- Part 5-56: Selection and erection of electrical equipment - Safety services

Errichten von Niederspannungsanlagen - Teil 5-56: Auswahl und Errichtung elektrischer Betriebsmittel - Einrichtungen für Sicherheitszwecke

Installations électriques à basse tension -- Partie 5-56: Choix et mise en oeuvre des matériels - Services de sécurité

Ta slovenski standard je istoveten z: HD 60364-5-56:2010

ICS:

91.140.50 Sistemi za oskrbo z elektriko Electricity supply systems

SIST HD 60364-5-56:2011

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HARMONIZATION DOCUMENT
DOCUMENT D'HARMONISATION
HARMONISIERUNGSDOKUMENT

HD 60364-5-56

February 2010

ICS 91.140

Supersedes HD 384.5.56 S1:1985

English version

**Low-voltage electrical installations -
Part 5-56: Selection and erection of electrical equipment -
Safety services
(IEC 60364-5-56:2009)**

Installations électriques à basse tension -
Partie 5-56: Choix et mise en oeuvre
des matériels -
Services de sécurité
(CEI 60364-5-56:2009)

Errichten von Niederspannungsanlagen -
Teil 5-56: Auswahl und Errichtung
elektrischer Betriebsmittel -
Einrichtungen für Sicherheitszwecke
(IEC 60364-5-56:2009)

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This Harmonization Document was approved by CENELEC on 2009-11-01. 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 64/1677/FDIS, future edition 2 of IEC 60364-5-56, 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 60364-5-56 on 2009-11-01.

This Harmonization Document supersedes HD 384.5.56 S1:1985.

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 (dop) 2010-11-01
at national level by publication of a harmonized national standard or by endorsement
- latest date by which the national standards conflicting (dow) 2012-11-01
with the HD have to be withdrawn

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 C of IEC 60364-5-56:2009 shall be disregarded and has been replaced by the normative Annex ZA, *Special national conditions*, and the informative Annex ZB, *A-deviations*. [SIST HD 60364-5-56:2011](https://standards.iteh.ai/catalog/standards/sist/5672e383-2e8b-431f-8289-60364-5-56-2011)

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Annexes ZA and ZB have been added by CENELEC.

56 Selection and erection of electrical equipment – Safety services

560.1 Scope

This part of HD 60364 covers general requirements for safety services, selection and erection of electrical supply systems for safety services and electrical safety sources.

Standby electrical supply systems are outside the scope of this part. This part does not apply to installations in hazardous areas (BE3), for which requirements are given in EN 60079-14.

560.2 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 1838:1999, *Lighting applications – Emergency lighting*

EN 50171:2001, *Central power supply systems*

EN 50200, *Method of test for resistance to fire of unprotected small cables for use in emergency circuits*

EN 50272-2, *Safety requirements for secondary batteries and battery installations – Part 2: Stationary batteries*

IEC 60331 (all parts), *Tests for electric cables under fire conditions – Circuit integrity*

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)*

HD 60364-4-43:200X¹⁾, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent (IEC 60364-4-43:2008, mod.)*

EN 60623, *Secondary cells and batteries containing alkaline or other non-acid electrolytes - Vented nickel-cadmium prismatic rechargeable single cells (IEC 60623)*

EN 60702-1, *Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V – Part 1: Cables (IEC 60702-1)*

EN 60702-2, *Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V – Part 2: Terminations (IEC 60702-2)*

EN 60896-11, *Stationary lead-acid batteries - Part 11: Vented types; General requirements and methods of test (IEC 60896-11)*

EN 60896-21, *Stationary lead-acid batteries - Part 21: Valve regulated types - Methods of test (IEC 60896-21)*

EN 62040-1, *Uninterruptible Power Systems (UPS) - Part 1: General and safety requirements for UPS (IEC 62040-1)*

EN 62040-3, *Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements (IEC 62040-3)*

ISO 8528-12, *Reciprocating internal combustion engine driven alternating current generating sets – Part 12: Emergency power supply to safety services*

¹⁾ To be ratified.

560.3 Terms and definitions

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

560.3.1

electric supply system for safety services

supply system intended to maintain the operation of essential parts of an electrical installation and equipment:

- for the health and safety of persons and livestock, and/or
- if required by national regulations, to avoid damage to the environment and to other equipment

NOTE 1 The supply system includes the source and the electrical circuits up to the terminals of electrical equipment.

NOTE 2 Examples of safety services include:

- emergence (escape) lighting;
- fire pumps;
- fire rescue services lifts;
- alarm systems, such as fire alarms, CO alarms and intruder alarms;
- evacuation systems;
- smoke extraction systems;
- essential medical systems.

560.3.2

electrical source for safety services

electrical source intended to be used as part of an electrical supply system for safety services

560.3.3

electrical circuit for safety services

electrical circuit intended to be used as part of an electrical supply system for safety services

560.3.4

standby electrical supply system

supply system intended to maintain, for reasons other than safety, the functioning of an electrical installation or parts thereof, in case of interruption of the normal supply

560.3.5

standby electrical source

electric source intended to maintain, for reasons other than safety, the supply to an electrical installation or parts thereof, in case of interruption of the normal supply

560.3.6

emergency lighting

lighting provided for use when the supply to the normal lighting fails

[EN 1838:1999, definition 3.1]

560.3.7

emergency lighting luminaire

luminaire which may or may not be provided with its own electrical source for safety services and which is used for safety or emergency lighting

560.3.8

escape sign luminaire

luminaire that indicates and assists the identification of escape routes

560.3.9

maintained mode

operating mode of a lighting system in which the emergency lighting lamps are energized at all times when normal or emergency lighting is required

560.3.10**non-maintained mode**

operating mode of a lighting system in which the emergency lighting lamps are in operation only when the supply to the normal lighting fails

560.3.11**response time**

time that elapses between the failure of the normal power supply and the auxiliary power supply energizing the equipment

560.3.12**central power supply system (unlimited power)**

central power system which supplies the required emergency power to essential safety equipment without any limitation in power output

[EN 50171:2001, definition 3.19, mod.]

560.3.13**central low-power supply system (low power output)**

central power supply system with a limitation of the power output of the system at 500 W for 3 h or 1 500 W for 1 h

[EN 50171:2001, definition 3.20, mod.]

NOTE A low-power supply system normally comprises a maintenance-free battery and a charging and testing unit.

560.3.14**escape route**

path to follow for access to a safe area in the event of an emergency

560.3.15**preferential circuit**

safety source derived directly from the incoming supply to the building intended to supply safety services which, in case of emergency, shall remain in operation for as long as possible

NOTE An example of such a safety service is sprinkler pumps.

560.3.16**minimum illuminance**

Illuminance for emergency lighting at the end of the rated operating time

560.3.17**safety service**

electrical system for electrical equipment provided to protect or warn persons in the event of a hazard, or essential to their evacuation from a location

560.4 Classification

560.4.1 An electrical supply system for safety services is either:

- a non-automatic supply, the starting of which is initiated by an operator, or
- an automatic supply, the starting of which is independent of an operator.

An automatic supply is classified as follows, according to the maximum changeover time:

- no-break: an automatic supply which can ensure a continuous supply within specified conditions during the period of transition, for example as regards variations in voltage and frequency;
- very short break: an automatic supply available within 0,15 s;
- short break: an automatic supply available within 0,5 s;
- average break: an automatic supply available within 5 s;

- medium break: an automatic supply available within 15 s;
- long break: an automatic supply available in more than 15 s.

560.4.2 The essential equipment for safety services shall be compatible with the changeover time in order to maintain the specified operation.

560.5 General

560.5.1 Safety services may be required to operate at all relevant times including during main and local supply failure and through fire conditions. To meet these requirements, specific sources, equipment, circuits and wiring are necessary. Some applications also have particular requirements, as in 560.5.2 and 560.5.3.

560.5.2 For safety services required to operate in fire conditions, the following additional two conditions shall be fulfilled:

- an electrical source for safety supply shall be selected in order to maintain a supply of adequate duration, and
- all equipment of safety services shall be provided, either by construction or by erection, with protection ensuring fire resistance of adequate duration.

NOTE The electrical safety supply source is generally additional to the normal supply source, for example the public supply network.

560.5.3 Where automatic disconnection of supply is used as a protective measure against electric shock, non-disconnection on the first fault is preferred. In IT systems, insulation monitoring devices shall be provided which give an audible and visible indication in the event of a first fault.

560.5.4 Regarding control and bus systems, a failure in the control or bus system of a normal installation shall not adversely affect the function of safety services.

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560.6 Electrical sources for safety services

560.6.1 The following electrical sources for safety services are recognized:

- storage batteries;
- primary cells;
- generator sets independent of the normal supply;
- a separate feeder of the supply network that is effectively independent of the normal feeder.

560.6.2 Safety sources for safety services shall be installed as fixed equipment and in such a manner that they cannot be adversely affected by failure of the normal source.

560.6.3 Safety sources shall be installed in a suitable location and be accessible only to skilled or instructed persons (BA5 or BA4).

560.6.4 The location of the safety source shall be properly and adequately ventilated so that exhaust gases, smoke or fumes from the safety source cannot penetrate areas occupied by persons.

560.6.5 Separate, independent feeders from a supply network shall not serve as electrical sources for safety services unless assurance can be obtained that the two supplies are unlikely to fail concurrently.

560.6.6 The safety source shall have sufficient capability to supply its related safety service.

560.6.7 A safety source may, in addition, be used for purposes other than safety services, provided the availability for safety services is not thereby impaired. A fault occurring in a circuit for purposes other than safety services shall not cause the interruption of any circuit for safety services.

560.6.8 Special requirements for safety sources not capable of operation in parallel

560.6.8.1 Adequate precautions shall be taken to avoid the paralleling of sources.

NOTE This may be achieved by mechanical interlocking.

560.6.8.2 Short-circuit protection and fault protection shall be ensured for each source.

560.6.9 Special requirements for safety services having sources capable of operation in parallel

NOTE 1 The parallel operation of independent sources normally requires the authorization of the supply undertaking. This may require special devices, for example to prevent reverse power.

Short-circuit protection and fault protection shall be ensured when the installation is supplied separately by either of the two sources or by both in parallel.

NOTE 2 Precautions may be necessary to limit current circulation in the connection between the neutral points of the sources, in particular the effect of third harmonics.

560.6.10 Central power supply system

Batteries shall be of vented or valve-regulated maintenance-free type and shall be of heavy duty industrial design, for example cells complying with EN 60623 or the EN 60896 series.

NOTE The minimum design life of the batteries at 20 °C should be 10 years.

Central power sources for emergency lighting shall comply with EN 50171.

560.6.11 Low-power supply system

The power output of a low-power supply system is limited to 500 W for a 3 h duration and 1500 W for a 1 h duration. Batteries can be of gas-tight or valve-regulated maintenance-free type and shall be of heavy duty industrial design, for example cells complying with EN 60623 or the EN 60896 series.

NOTE The minimum design life of the batteries at 20 °C should be 5 years.

Central power sources for emergency lighting shall comply with EN 50171.

560.6.12 Uninterruptible power supply sources

Where an uninterruptible power supply is used, it shall:

- a) be able to operate distribution circuit protective devices, and
- b) be able to start the safety devices when it is operating in the emergency condition from the inverter supplied by the battery, and
- c) comply with the requirements of 560.6.10, and
- d) comply with EN 62040-1 or EN 62040-3, as applicable.

560.6.13 Safety generating sets

Where a safety generating set is used as a safety source, it shall comply with ISO 8528-12.

560.6.14 The condition of the source for safety services (ready for operation, under fault conditions, feeding from the source for safety services) shall be monitored.

560.7 Circuits of safety services

560.7.1 Circuits of safety services shall be independent of other circuits.

NOTE This means that an electrical fault or any intervention or modification in one system must not affect the correct functioning of the other. This may necessitate separation by fire-resistant materials or different routes or enclosures.