



**SLOVENSKI STANDARD**  
**SIST EN 50298:2000**  
**01-september-2000**

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**Prazni okrovi za sestave nizkonapetostnih stikalnih in krmilnih naprav – Splošne zahteve**

Empty enclosures for low-voltage switchgear and controlgear assemblies - General requirements

Leergehäuse für Niederspannungsschaltgerätekombinationen - Allgemeine Anforderungen

Enveloppes destinées aux ensembles d'appareillage à basse tension - Règles générales pour les enveloppes vides

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29.130.20	Nizkonapetostne stikalne in krmilne naprave	Low voltage switchgear and controlgear
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EUROPEAN STANDARD

EN 50298

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## Empty enclosures for low-voltage switchgear and controlgear assemblies General requirements

Enveloppes destinées aux ensembles  
d'appareillage à basse tension  
Règles générales pour les enveloppes  
vides

Leergehäuse für Niederspannungs-  
schaltgerätekombinationen  
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# 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

This European Standard was prepared by the Technical Committee CENELEC TC 17D, low-voltage switchgear and controlgear assemblies.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50298 on 1998-04-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1999-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1999-04-01

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## 1 General

### 1.1 *Scope and object*

The object of this standard is to specify definitions, classifications, characteristics and test requirements of enclosures to be used as part of switchgear and controlgear assemblies in accordance with the EN 60439 series, the rated voltage of which does not exceed 1 000 V a.c. at frequencies not exceeding 1 000 Hz, or 1 500 V d.c. and suitable for general use for either indoor or outdoor applications.

This standard applies to empty enclosures, prior to the incorporation of switchgear and controlgear components by the user, as supplied by the enclosure manufacturer.

This standard does not apply to enclosures which are covered by other specific products standards (e.g. IEC 60670, household and similar installations).

Compliance with the safety requirements of the applicable product standard is the responsibility of the final assembly manufacturer.

This standard may serve as a basis for other technical committees.

### 1.2 *Normative references*

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 50102	1995	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK-Code)
EN 60439	series	Low-voltage switchgear and controlgear assemblies
EN 60439-1	1994	Part 1: Type-tested and partially type-tested assemblies (IEC 60439-1:1992 + corr. December 1993)
EN 60439-5	1996	Part 5: Particular requirements for assemblies intended to be installed outdoors in public places - Cable distribution cabinets (CDCs) for power distribution in networks (IEC 60439-5:1996)
EN 60529	1991	Degrees of protection provided by enclosures (IP-Code) (IEC 60529:1989)
EN 60695-2-1/0	1996	Fire hazard testing - Part 2: Test methods Section 1/sheet 0: Glow-wire test methods - General (IEC 60695-2-1/0:1994)
EN 60695-2-1/1	1996	Fire hazard testing - Part 2: Test methods Section 1/sheet 1: Glow-wire end-product test and guidance (IEC 60695-2-1/1:1994 + corr. May 1995)

HD 528 S2	1997	A method of temperature-rise assessment by extrapolation for partially type-tested assemblies (PTTA) of low-voltage switchgear and controlgear (IEC 60890:1987 + corrigendum Mar. 1988 + A1:1995)
IEC 60068-2-2 + 2A	1974 1976	Basic environmental testing procedures -- Part 2: Tests - Tests B: Dry heat (harmonized as EN 60068-2-2:1993)
IEC 60068-2-11	1981	Basic environmental testing procedures -- Part 2: Tests - Test Ka: Salt mist (harmonized as HD 323.2.11 S1:1988)
IEC 60068-2-30 + A1	1980 1985	Basic environmental testing procedures -- Part 2: Tests - Test Db and guidance: Damp heat, cyclic (12 + 12 hour cycle) (harmonized as HD 323.2.30 S3:1988)
IEC 60068-2-75	1997	Environmental testing -- Part 2: Tests - Test Eh: Hammer tests (harmonized as EN 60068-2-75:1997)
IEC 60670	1989	General requirements for flush mounting boxes for accessories for household and similar fixed electrical installations
ISO 178	1993	Plastics -- Determination of flexural properties <a href="https://standards.iteh.ai/catalog/standards/sist/32a8462a-b6b8-48eb-8759-">https://standards.iteh.ai/catalog/standards/sist/32a8462a-b6b8-48eb-8759-</a>
ISO 179	1993	Plastics -- Determination of Charpy impact strength
ISO 2409	1992	Paints and varnishes -- Cross-cut test
ISO 4628-3	1982	Paints and varnishes -- Evaluation of degradation of paint coatings - Designation of intensity, quantity and size of common types of defect -- Part 3: Designation of degree of rusting
ISO 4892-2	1994	Plastics -- Methods of exposure to laboratory light sources Part 2: Xenon-arc sources
ISO 11469	1993	Plastics -- Generic identification and marking of plastic products

## 2 Definitions

2.1 **empty enclosure:** Enclosure intended for the supporting and the installation of electrical equipment in its internal space and which provides to this internal space a suitable protection against external influences and a specified degree of protection against approach to or contact with live parts and against the contact with moving parts.

NOTE: Throughout this standard, the word enclosure is used for empty enclosure.

2.2 **protected space:** The internal space or portion of the internal space of the enclosure as specified by the manufacturer intended for the mounting of switchgear and controlgear for which the specified protection is provided by the enclosure.

2.3 **cover:** An external part of the enclosure.



- 2.4 **door**: A hinged or sliding cover.
- 2.5 **mounting plate**: A separate internal accessory of the enclosure intended for the mounting of electrical components.
- 2.6 **cable gland plate**: A removable accessory of the enclosure, intended for securing and sealing of cables, conductors and conduits at their point of entry.
- 2.7 **removable cover**: A cover which is designed for closing an opening in the external enclosure and which can be removed for carrying out certain operations and maintenance work.
- NOTE: A lid is considered as a removable cover.
- 2.8 **enclosure manufacturer**: The manufacturer of an enclosure or the vendor who resells under his own responsibility.
- 2.9 **box**: Enclosure, generally of small dimensions and, in principle, intended to be mounted on a vertical plane.
- 2.10 **cubicle**: Empty enclosure, generally of large dimensions, and in principle of the floor standing type, which may comprise several sections, sub-sections or compartments. Also enclosures having an irregular shape such as a desk are to be considered cubicles for testing purposes.

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### 3 Classification

Enclosures are classified according to:

#### 3.1 The type of material

- 3.1.1 Insulating
- 3.1.2 Metallic
- 3.1.3 Combination of above

#### 3.2 Method of fixing

- 3.2.1 Floor standing
- 3.2.2 Wall mounting
- 3.2.3 Flush mounting
- 3.2.4 Pole mounting

#### 3.3 The intended location

- 3.3.1 Outdoor
- 3.3.2 Indoor

#### 3.4 The degree of protection

- 3.4.1 IP-code, according to EN 60529
- 3.4.2 IK-code, according to EN 50102

#### 3.5 Rated insulation voltage (for enclosures made of insulating materials)

#### 4 EMC Requirements

EMC requirements are not applicable for empty enclosures.

#### 5 Information to be given regarding the enclosure

The following information shall be given by the manufacturer.

##### 5.1 *Marking*

The enclosure shall be identifiable making it possible for the final assembler to obtain relevant information from the enclosure manufacturer, as follows.

- Either the name, trade mark or identification mark of the enclosure manufacturer.
- Type designation or identification number of the enclosure.

The marking shall be durable and easily legible and may be inside the enclosure.

Compliance is checked according to the test of 8.2 and by inspection.

The marking for the recycling of plastic parts shall follow ISO 11469.

NOTE: Marking of enclosures intended for Class II ASSEMBLIES with the symbol 60417-IEC-51172 is the responsibility of the final ASSEMBLY manufacturer.

##### 5.2 *Documentation*

The enclosure manufacturer's documentation shall include all relevant constructional, mechanical characteristics, material type, any instruction necessary for the correct handling, assembling, mounting and service conditions of the enclosure and reference to this standard.

Information shall also be available concerning the thermal power dissipation relative to the effective cooling surface, this will provide the user with the correct data for the selection of electrical equipment to be installed. The relevant air temperature inside the protected space is assumed to be obtained with substantially uniform power distribution inside the enclosure.

NOTE 1: It should be in the form of an appropriate calculation method, e.g. HD 528 S1:1989

NOTE 2: The basis external ambient temperature is defined in clause 6.

#### 6 Service conditions

Enclosures conforming to this standard are intended for use under the following service conditions.

The enclosure manufacturer shall specify the locations for which the enclosure is intended.

## 6.1 *Normal service conditions*

### 6.1.1 *Ambient air temperature*

#### 6.1.1.1 *Ambient air temperature for indoor locations*

The ambient air temperature does not exceed +40 °C and its average over a period of 24 h does not exceed +35 °C.

The lower limit of the ambient air temperature is -5 °C.

#### 6.1.1.2 *Ambient air temperature for outdoor locations*

The ambient air temperature does not exceed +40 °C and its average over a period of 24 h does not exceed +35 °C.

The lower limit of the ambient air temperature is -25 °C in a temperate climate and -50 °C in an arctic climate.

NOTE: The use of enclosures in an arctic climate may require a special agreement between enclosure manufacturer and user.

### 6.1.2 *Atmospheric conditions*

#### 6.1.2.1 *Atmospheric conditions for indoor locations*

The air is clean and its relative humidity does not exceed 50% at a maximum temperature of +40 °C. Higher relative humidity may be permitted at lower temperatures, for example 90% at +20 °C.

#### 6.1.2.2 *Atmospheric conditions for outdoor locations*

The relative humidity may be temporarily as high as 100 % at a maximum temperature of +25°C.

### 6.1.3 *Description of locations*

For outdoor locations the additional tests specified in 8.11 and 8.12.3 apply.

For indoor locations the additional test specified in 8.12.2 applies.

## 6.2 *Special service conditions*

Where any of the following special service conditions exist, the applicable particular requirements shall be subject to agreement between user and manufacturer.

Examples of such conditions may include the following:

- abnormal ambient air temperature and humidity;
- presence of corrosive substances;
- presence of particular dusts (coal, cement, ...);
- abnormal mechanical stresses (seismic, ...);
- presence of fauna, flora, molds;