

TECHNICAL SPECIFICATION

SPECIFICATION TECHNIQUE

**Low-voltage switchgear and controlgear assemblies –
Part 7: Assemblies for specific applications such as marinas, camping sites,
market squares, electric vehicles charging stations**

**Ensembles d'appareillage à basse tension –
Partie 7: Ensembles pour installations publiques particulières telles que
marinas, terrains de camping, marchés et emplacements analogues et pour
borne de charge de véhicules électriques**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES –**Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicles charging stations**

FOREWORD

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This document is being issued in the technical specification series of publications (according to the ISO/IEC Directives, Part 1, 3.1.1.1) as a "prospective standard for provisional application" in the field of SC 17D because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the IEC Central Office.

A review of this technical specification will be carried out not later than 2 years after its publication with the options of: extension for another 3 years; conversion into an International Standard; or withdrawal.

IEC/TS 61439-7, which is a technical specification, has been prepared by subcommittee 17D: Low-voltage switchgear and controlgear assemblies, of IEC technical committee 17: Switchgear and controlgear.

The text of this technical specification is based on the following documents:

FDIS	Report on voting
17D/478/FDIS	17D/482/RVD

Following the result of the vote on the FDIS, a questionnaire was circulated, leading to the decision to publish the project as a Technical Specification.

Questionnaire	Result of voting
17D/487/Q	17D/494/RQ

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This technical specification is to be read in conjunction with IEC 61439-1. The provisions of the general rules dealt with in IEC 61439-1 (hereinafter referred to as Part 1) are applicable to this technical specification where they are specifically cited. When this technical specification states “addition” “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

Subclauses that are numbered with a 101 (102, 103, etc.) suffix are additional to the same subclause in Part 1.

Tables and figures in this Part 7 that are new are numbered starting with 101.

New annexes in this Part 7 are lettered AA, BB, etc.

In this standard, terms written in small capitals are defined in Clause 3.

The reader's attention is drawn to the fact that Annex CC lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this technical specification.

A list of all parts of the IEC 61439 series, under the general title *Low-voltage switchgear and controlgear assemblies* can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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IEC TS 61439-7:2014

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Withdrawn

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES –

Part 7: Assemblies for specific applications such as marinas, camping sites, market squares, electric vehicles charging stations

1 Scope

NOTE 1 Throughout this technical specification, the terms AMHS (see 3.1.101), ACCS (see 3.1.102), AMPS (see 3.1.103), ACSEV (see 3.1.104) are used for low-voltage switchgear and controlgear assemblies intended for use respectively in marinas and similar locations (AMHS), camping sites and similar locations (ACCS), market squares and other similar external public sites (AMPS), charging stations (ACSEV). The term ASSEMBLIES is used for indicating all the boards.

This Part of IEC 61439, which is a Technical Specification, defines the specific requirements of ASSEMBLIES as follows:

- ASSEMBLIES for which the rated voltage does not exceed 1 000 V in case of a.c. or 1 500 V in case of d.c.;
- stationary or movable ASSEMBLIES with enclosure;
- ASSEMBLIES intended for use in connection with the generation, transmission, distribution and conversion of electric energy, and for the control of electric energy consuming equipment;
- ASSEMBLIES operated by ordinary persons;
- ASSEMBLIES intended to be installed and used in marinas, camping sites, market squares and other similar external public sites or similar sites;
- ASSEMBLIES intended for charging stations for electric vehicles.

NOTE 2 ASSEMBLIES intended for charging stations for electric vehicles (ACSEV) are designed to integrate the functionality for electric vehicle conductive charging systems according to IEC 61851-1.

This technical specification applies to all ASSEMBLIES whether they are designed, manufactured and verified on a one-off basis or fully standardised and manufactured in quantity.

The manufacture and/or assembly may be carried out other than by the original manufacturer (see 3.10.1 of Part 1).

This technical specification does not apply to individual electrical equipment and self-contained components, such as circuit breakers, fuse switches, electronic equipment, etc. which comply with the relevant product standards.

NOTE 3 Where electrical equipment is directly connected to public low voltage supply system and equipped with a meter for billing of the legal provider of the low voltage supply, particular requirements based on national regulations apply, if any.

This technical specification does not apply to boxes and enclosures for electrical accessories for household and similar fixed electrical installations as defined in IEC 60670-24.

2 Normative references

This clause of Part 1 applies except as follows.

Addition:

IEC 60068-2-75, *Environmental testing – Part 2-75: Tests – Test Eh: Hammer tests*

IEC 60364-4-43, *Low-voltage electrical installations – Part 4-43: Protection for safety – Protection against overcurrent*

IEC 60364-7-708, *Low-voltage electrical installations – Part 7-708: Requirements for special installations or locations – Caravan parks, camping parks and similar locations*

IEC 60364-7-709, *Low-voltage electrical installations – Part 7-709: Requirements for special installations or locations – Marinas and similar locations*

IEC 60364-7-722¹, *Low-voltage electrical installations – Part 7-722: Requirements for special installations or locations – Supply of electric vehicle*

IEC 60364-7-740, *Electrical installations of buildings – Part 7-740: Requirements for special installations or locations – Temporary electrical installations for structures, amusement devices and booths at fairgrounds, amusement parks and circuses*

IEC 61439-1:2011, *Low-voltage switchgear and controlgear assemblies – Part 1: General rules*

3 Terms and definitions

This clause of Part 1 applies except as follows.

3.1 General terms

Additional terms:

3.1.101

low voltage switchgear and controlgear ASSEMBLY for marinas and harbors sites AMHS

combination of one or more transforming or switching devices together with associated control, measuring, signaling, protective and regulating equipment, with all their internal electrical and mechanical interconnections and structural parts, designed and built for use in all marinas, harbors and similar sites

3.1.102

low voltage switchgear and controlgear ASSEMBLY for camping and caravan sites ACCS

combination of one or more transforming or switching devices together with associated control, measuring, signaling, protective and regulating equipment, with all their internal electrical and mechanical interconnections and structural parts, designed and built for use in all camping, caravan and similar sites

3.1.103

low voltage switchgear and controlgear ASSEMBLY for markets and other external public sites AMPS

combination of one or more transforming or switching devices together with associated control, measuring, signaling, protective and regulating equipment, with all their internal electrical and mechanical interconnections and structural parts, designed and built for use in all market squares and other similar external public sites

¹ To be published.

3.1.104

low voltage switchgear and controlgear ASSEMBLY for electric vehicles charging stations ACSEV

combination of one or more transforming or switching devices together with associated control, measuring, signaling, protective and regulating equipment, with all their internal electrical and mechanical interconnections and structural parts, designed and built for electric vehicles charging stations

Note 1 to entry: Electric vehicles conductive charging systems as described in IEC 61851-1 are included.

Modifications:

3.3 External design of ASSEMBLIES

3.3.1

open-type ASSEMBLY

This term of Part 1 does not apply.

3.3.2

dead-front ASSEMBLY

This term of Part 1 does not apply.

3.5 Conditions of installation of ASSEMBLIES

3.5.4

movable ASSEMBLY

Addition of a new note to entry:

Note 1 to entry: Stationary or movable ASSEMBLIES are intended to be connected to supply by either fixed or temporary connections e.g plugs and socket outlets.

Additional terms:

3.5.101

ground-mounted stationary ASSEMBLY

stationary ASSEMBLY intended to be installed at ground level on a foundation

3.5.102

transportable ASSEMBLY

semi-fixed ASSEMBLY

movable ASSEMBLY intended for use in a place where it is not permanently fixed; its location may vary during use on the same site

3.5.103

restricted access

access to the ASSEMBLY, limited e.g. by private housing, private camping areas or similar places

3.5.104

non-restricted access

unlimited access to the ASSEMBLY for all persons e.g public areas

3.101

water and other fluids system

part of the ASSEMBLY which contains water tubes, valves, joins and taps as service to connected user

EXAMPLES: Campers, caravans, vessels, etc.

4 Symbols and abbreviations

This clause of Part 1 applies.

5 Interface characteristics

This clause of Part 1 applies except as follows.

5.4 Rated diversity factor (RDF)

Addition:

In the absence of information concerning the actual load currents, the assumed loading of the outgoing circuits of the ASSEMBLY or group of outgoing circuits may be based on the values in Table 101.

Table 101 does not apply for ACSEV. For ACSEV the diversity factor of the outgoing circuit supplying directly the connecting point (e.g. the socket-outlet) shall be taken as equal to 1. The diversity factor of the distribution circuit supplying multiple connecting points may be reduced if a load control is available.

NOTE For ACSEV it is considered that in normal use each single connecting point is used at its rated current.

5.6 Other characteristics

Replacement of the item g):

g) intended for use by ordinary persons (see 3.7.14 of Part 1);

Additional item:

q) restricted access or non-restricted access (see 3.5.103 and 3.5.104).

6 Information

This clause of Part 1 applies except as follows.

6.1 ASSEMBLY designation marking

Replacement of the whole text of this subclause:

The ASSEMBLY manufacturer shall provide each ASSEMBLY with one or more labels, marked in a durable manner and located in a place such that they are visible and legible when the ASSEMBLY is installed and in operation.

Compliance is checked according to the test of 10.2.7 of Part 1 and by inspection.

The following information regarding the ASSEMBLY shall be provided on the label(s):

- a) ASSEMBLY manufacturer's name or trade mark (see 3.10.2 of Part 1);
- b) type designation or identification number or any other means of identification, making it possible to obtain relevant information from the ASSEMBLY manufacturer;
- c) means of identifying date of manufacture;
- d) IEC 61439-7;
- e) type of current and frequency in case of a.c (see 5.3.4 of Part 1);
- f) rated voltage (U_n) (of the ASSEMBLY) (see 5.2.1 of Part 1);

- g) rated current of the ASSEMBLY (I_{nA}) (see 5.3.1 of Part 1) for movable ASSEMBLIES;
- h) degree of protection;
- i) the weight, for transportable ASSEMBLIES (see 3.5.102), where it exceeds 30 kg;
- j) AMHS (see 3.1.101), ACCS (see 3.1.102), AMPS (see 3.1.103), ACSEV (see 3.1.104) or equivalent terms.

6.2.1 Information relating to the ASSEMBLY

Replacement of the whole text of this subclause:

The following additional information, where applicable, shall be provided in the ASSEMBLY manufacturer's technical documentation supplied with the ASSEMBLY:

- k) rated operational voltage (U_e) (of a circuit) (see 5.2.2 of Part 1);
- l) rated impulse withstand voltage (U_{imp}) (see 5.2.4 of Part 1);
- m) rated insulation voltage (U_i) (see 5.2.3 of Part 1);
- n) rated current of each circuit (I_{nc}) (see 5.3.2 of Part 1);
- o) rated frequency (f_n) (see 5.5 of Part 1);
- p) rated diversity factor(s) (RDF) (see 5.4);
- q) all necessary information relating to the other declared classifications and characteristics (see 5.6);
- r) overall dimensions (including projections e.g handles, covers, doors).

7 Service conditions

This clause of Part 1 applies except as follows.

7.2 Special service conditions

Addition:

NOTE Exposure to traffic vibration is a normal service condition for ground mounted ASSEMBLIES.

8 Constructional requirements

This clause of Part 1 applies except as follows.

8.2 Degree of protection provided by an ASSEMBLY enclosure

8.2.1 Protection against mechanical impact

Replacement of the whole text of this subclause:

8.2.1.1 ASSEMBLIES in locations with restricted access

The mechanical properties of an ASSEMBLY intended to be installed in areas with restricted access shall comply with 10.2.101 of this technical specification.

The minimum degree of protection against mechanical impact provided by the ASSEMBLY enclosure shall be IK07 according to IEC 62262.

8.2.1.2 ASSEMBLIES in locations with non-restricted access

The mechanical properties of an ASSEMBLY intended to be in non-restricted access areas shall comply with 10.2.102 of this technical specification.

For wall mounted ASSEMBLIES the minimum degree of protection against mechanical impact shall be IK08.

For ground mounted ASSEMBLIES the minimum degree of protection against mechanical impact shall be IK10.

8.2.2 Protection against contact with live parts, ingress of solid foreign bodies and water

Replacement of the 2nd, 3rd and 4th paragraph:

After installation in accordance with the manufacturer's instructions, the degree of protection of an indoor ASSEMBLY shall be at least IP41 and of an outdoor ASSEMBLY IP44, according to IEC 60529.

The degree of protection shall be ensured also when the supply cords are plugged into the ASSEMBLY.

8.4 Protection against electric shock

8.4.3.1 Installation conditions

Additional subclauses:

If the protective measure of protection by automatic disconnection of the supply is used, the ASSEMBLY shall allow compliance with the relevant requirements of

IEC 60364-7-709 (AMHS) or

IEC 60364-7-708 (ACCS) or

IEC 60364-7-740 (AMPS) or

IEC 60364-7-722 (ACSEV).

8.4.3.3 Electrical separation

Additional paragraph:

If the protective measure of electrical separation is used, the ASSEMBLY shall allow compliance with the relevant requirements of

IEC 60364-4-41 (AMPS, ACCS and ACSEV) or

IEC 60364-7-709 (AMHS).

8.5 Incorporation of switching devices and components

8.5.3 Selection of switching devices and components

Additional NOTE:

NOTE According to the relevant installation standards IEC 60364 (series), consideration of the need for overvoltage protection (SPDs) complying with a relevant IEC standard (for example IEC 61643) to prevent possible damage to the installation is to be taken into account.

8.5.6 Barriers

This subclause of Part 1 does not apply.

Additional subclauses:

8.5.101 Protection against overcurrent

For protection against overcurrent, the ASSEMBLY shall allow compliance with the relevant requirements of:

IEC 60364-7-709 for AMHS

IEC 60364-7-708 for ACCS

IEC 60364-4-43 or IEC 60364-7-740 if applicable for AMPS

IEC 60364-7-722 for ACSEV.

Devices for protection against overcurrent shall comply with a relevant IEC standard.

8.5.102 Protection against electric shocks

For protection against electric shocks, the ASSEMBLY shall allow compliance with the relevant requirements of:

IEC 60364-7-709 for AMHS

IEC 60364-7-708 for ACCS

IEC 60364-4-43 or IEC 60364-7-740 if applicable for AMPS

IEC 60364-7-722 for ACSEV.

Devices for protection against electric shocks shall comply with a relevant IEC standard.

8.5.103 Socket-outlets general

For socket-outlets, the ASSEMBLY shall allow compliance with the relevant requirements of:

IEC 60364-7-709 for AMHS

IEC 60364-7-708 for ACCS

IEC 60364-4-43 or IEC 60364-7-740 if applicable for AMPS

IEC 60364-7-722 for ACSEV.

Socket-outlets shall comply with the relevant standards.

Additional subclauses:

8.101 Supports and securing devices of ASSEMBLY

8.101.1 Handling provisions

In case of movable ASSEMBLIES, handles (or any other equivalent system) shall be provided on the ASSEMBLY and be firmly attached to the enclosure or supporting framework.

8.101.2 Water and other fluid systems

Water and other fluid systems may be installed in the enclosure but a separated compartment shall be provided.

The separation between each compartment shall have a degree of protection of at least IP44 in accordance with IEC 60529.

8.101.3 Other services

Other services (e.g. telecommunication, Internet) may be installed in the same enclosure but providing that any unacceptable interferences are not created.

9 Performance requirements

This clause of Part 1 applies.

10 Design verification

This clause of Part 1 applies except as follows.

10.2.6 Mechanical impact

This subclause of Part 1 does not apply.

Additional subclauses:

10.2.101 Verification of mechanical strength for ASSEMBLIES intended to be installed in an area with restricted access

10.2.101.1 Verification of resistance to mechanical shock impacts induced by sharp edged objects

This test is subjected to an agreement between manufacturers and users.

If agreed between manufacturer and user, the following tests shall be carried out on all ground-mounted stationary ASSEMBLIES intended to be installed outdoor.

The test shall be carried out using an impact apparatus as described in IEC 60068-2-75 but having a steel striker element instead of the sandbag with a mass of 5 kg and having the end profiled as shown in Figure 101.

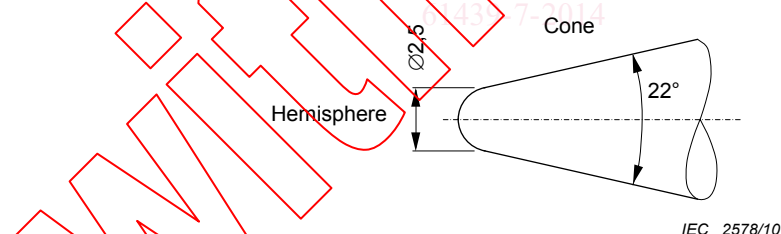


Figure 101 – Striker element for test of resistance to mechanical shock impacts induced by sharp-edged objects

The striker element shall be raised through a height of 0,4 m and allowed to drop and impact the surface of the ASSEMBLY under test, thus providing an impact energy of 20 J.

Each test shall consist of one blow aimed at the centre of each of the vertical surfaces of the ASSEMBLY which are visible when the ASSEMBLY is installed in its normal service position.

Blows shall not be applied on components mounted externally to the enclosure e.g. socket-outlets, push-buttons, displays etc.

Separate enclosures may be used for each of the test blows.

If the enclosure is of a cylindrical form, the test consists of three blows positioned with an angular displacement of 120°.