

STN	Nízkonapäťové rozvádzače. Časť 5: Rozvádzače na rozvod energie vo verejných sieťach.	STN EN 61439-5 35 7107
------------	---	--

Low-voltage switchgear and controlgear assemblies - Part 5: Assemblies for power distribution in public networks

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/15

Obsahuje: EN 61439-5:2015, IEC 61439-5:2014

Oznámením tejto normy sa od 29.09.2017 ruší
STN EN 61439-5 (35 7107) z augusta 2011

120758

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2015
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy
rozmnžovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD

EN 61439-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2015

ICS 29.130.20

Supersedes EN 61439-5:2011

English Version

**Low-voltage switchgear and controlgear assemblies -
Part 5: Assemblies for power distribution in public networks
(IEC 61439-5:2014)**

Ensembles d'appareillage à basse tension -
Partie 5: Ensembles pour réseaux de distribution publique
(IEC 61439-5:2014)

Niederspannungs-Schaltgerätekombinationen -
Teil 5: Schaltgerätekombinationen in öffentlichen
Energieverteilungsnetzen
(IEC 61439-5:2014)

This European Standard was approved by CENELEC on 2014-09-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 17D/492/CDV, future edition 2 of IEC 61439-5, prepared by SC 17D "Low-voltage switchgear and controlgear assemblies" of IEC/TC 17 "Switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61439-5:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-07-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-29

This document supersedes EN 60439-5:2011.

This standard is to be read in conjunction with EN 61439-1.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This standard covers the Principle Elements of the Safety Objectives for Electrical Equipment Designed for Use within Certain Voltage Limits (LVD - 2006/95/EC).

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive.

For the relationship with EU Directive see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 61439-5:2014 was approved by CENELEC as a European Standard without any modification.

In the Bibliography of EN 61439-1:2011, the following note has to be **added** for the standard indicated:

ISO 9223

NOTE

Harmonised as EN ISO 9223.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Annex ZA of EN 61439-1:2011 applies, except as follows:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Addition:</i>				
IEC 60695-11-10	2013	Fire hazard testing -- Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	2013
IEC 61439-1	2011	Low-voltage switchgear and controlgear assemblies -- Part 1: General rules	EN 61439-1	2011
ISO 6506-1	-	Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation	EN ISO 6506-1	-

Annex ZZ
(informative)

Coverage of Essential Requirements of EU Directive 2004/108/EC

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant essential requirements as given in Article 1 of Annex I of the EU Directive 2004/108/EC.

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directive concerned.

WARNING: Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Low-voltage switchgear and controlgear assemblies –
Part 5: Assemblies for power distribution in public networks**

**Ensembles d'appareillage à basse tension –
Partie 5: Ensembles pour réseaux de distribution publique**





THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
 3, rue de Varembe
 CH-1211 Geneva 20
 Switzerland

Tel.: +41 22 919 02 11
 Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue

The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary

More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue

Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary

Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 61439-5

Edition 2.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Low-voltage switchgear and controlgear assemblies –
Part 5: Assemblies for power distribution in public networks**

**Ensembles d'appareillage à basse tension –
Partie 5: Ensembles pour réseaux de distribution publique**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

W

ICS 29.130.20

ISBN 978-2-8322-1831-0

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	6
3 Terms and definitions	6
4 Symbols and abbreviations	7
5 Interface characteristics.....	7
6 Information	8
7 Service conditions	8
8 Constructional requirements	9
9 Performance requirements.....	11
10 Design verification	11
11 Routine verification	24
Annexes	25
Annex O (informative) Guidance on temperature rise verification	26
Annex AA (normative) Cross-section of conductors.....	27
Annex BB (informative) Items subject to agreement between the ASSEMBLY manufacturer and the user	29
Annex CC (informative) Design verification.....	33
Annex DD (informative) List of notes concerning certain countries	34
Bibliography	35
Figure 101 – Typical distribution network.....	6
Figure 102 – Diagram of test to verify resistance to shock load of a PENDA-O	14
Figure 103 – Diagram of test to verify impact force withstand of a PENDA-O.....	15
Figure 104 – Diagram of test to verify the resistance to static load	16
Figure 105 – Sandbag for test to verify the resistance to shock load	17
Figure 106 – Diagram of test to verify resistance to torsional stress of a PENDA-O	18
Figure 107 – Diagram of test to verify the mechanical strength of doors	21
Figure 108 – Striker element for test of resistance to mechanical shock impacts induced by sharp-edged objects.....	22
Figure 109 – Typical test arrangement for mechanical strength of base.....	23
Table 101 – Values of assumed loading	8
Table 102 – Axial load to be applied to the inserts	22
Table AA.1 – Minimum and maximum cross-section of copper and aluminium conductors, suitable for connection (see 8.8).....	27
Table AA.2 – Standard cross-sections of round copper conductors and approximate relationship between mm ² and AWG/kcmil sizes (see 8.8 of Part 1).....	28
Table BB.1 – Items subject to agreement between the ASSEMBLY manufacturer and the user ²⁹	
Table CC.1 – List of design verifications to be performed.....	33

INTERNATIONAL ELECTROTECHNICAL COMMISSION

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES –**Part 5: Assemblies for power distribution in public networks**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61439-5 has been prepared by subcommittee 17D: Low-voltage switchgear and controlgear assemblies, of IEC technical committee 17: Switchgear and controlgear.

This second edition cancels and replaces the first edition published in 2010. It constitutes a technical revision.

This edition includes the following significant technical changes with respect to the latest edition:

- confirmation that tests carried out on the most onerous PENDA are deemed to verify the performance of similar and less onerous assemblies of the same general construction and rating;
- more precise timing/conditions for impact force withstand tests for PENDAs designed for operation in an arctic climate;
- correction of the direction of the applied force in the static load test.

The text of this standard is based on the following documents:

CDV	Report on voting
17D/492/CDV	121B/13/RVC

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

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

This standard 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 only applicable to this standard insofar as they are specifically cited. When this standard 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 5 that are new are numbered starting with 101.

New annexes in this Part 5 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 DD lists all of the “in-some-country” clauses on differing practices of a less permanent nature relating to the subject of this standard.

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.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR ASSEMBLIES –

Part 5: Assemblies for power distribution in public networks

1 Scope

This part of IEC 61439 defines the specific requirements for public electricity network distribution assemblies (PENDAs).

PENDAs have the following criteria:

- used for the distribution of electrical energy in three phase systems for which the rated voltage does not exceed 1 000 V a.c. (see Figure 101 for a typical distribution network);
- stationary;
- open ASSEMBLIES are not covered by this standard;
- suitable for installation in places where only skilled persons have access for their use, however, outdoor types may be installed in situations that are accessible to ordinary persons;
- for indoor or outdoor use.

The object of this standard is to state the definitions and to specify the service conditions, construction requirements, technical characteristics and tests for PENDAs. Network parameters may require tests at higher performance levels.

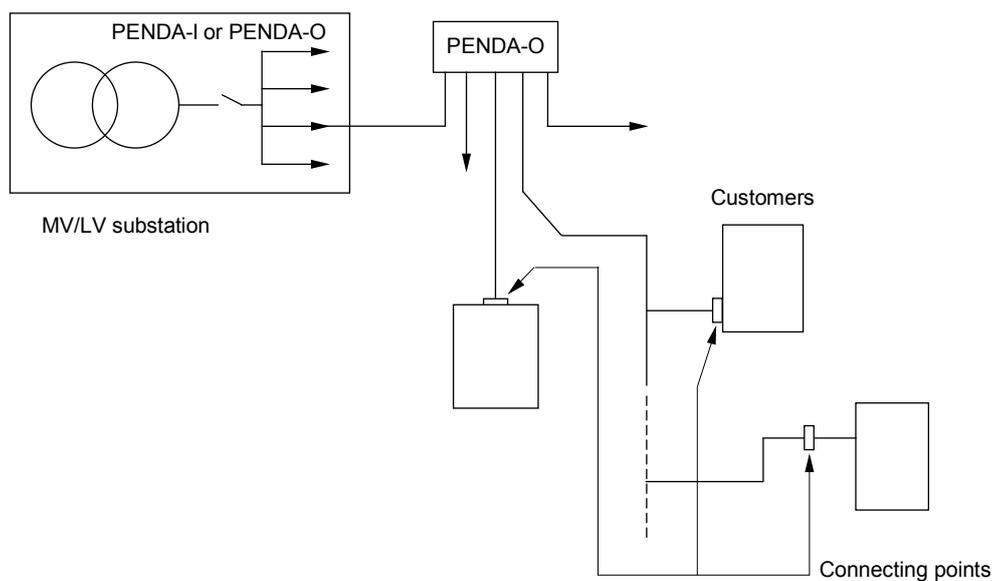
PENDAs may also include control and or signalling devices associated with the distribution of electrical energy.

This standard applies to all PENDAs whether they are designed, manufactured 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 IEC 61439-1:2011).

This standard does not apply to individual devices and self-contained components, such as motor starters, fuse switches, electronic equipment, etc. which comply with the relevant product standards.

This standard does not apply to specific types of ASSEMBLIES covered by other parts of IEC 61439 series.



IEC

Figure 101 – Typical distribution network

NOTE 1 If a PANDA is equipped with additional equipment (for example meters), in such a way that the main function is changed considerably, then other standards can also apply as agreed between user and manufacturer (see 8.5 of IEC 61439-1:2011).

NOTE 2 Where local regulations and practices permit, a PANDA according to this standard can be used in other than public networks.

2 Normative references

This clause of Part 1 applies except as follows.

Addition:

IEC 60695-11-10:2013, *Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*

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

ISO 6506-1, *Metallic materials – Brinell hardness test – Part 1: Test method*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN