ICS 29.180 SLOVENSKÁ TECHNICKÁ NORMA Júl 2023

STN	**Výkonové transformátory** **Časť 25: Neutrálne uzemňovacie rezistory**	**STN** **EN IEC 60076-25** 35 1100

Power transformers - Part 25: Neutral grounding resistors

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. 06/23

Obsahuje: EN IEC 60076-25:2023, IEC 60076-25:2023

136932

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60076-25

March 2023

ICS 29.180

English Version

Power transformers - Part 25: Neutral grounding resistors (IEC 60076-25:2023)

Transformateurs de puissance - Partie 25: Résistances de mise à la terre du neutre (IEC 60076-25:2023)

Leistungstransformatoren - Teil 25: Neutrale Erdungswiderstände (IEC 60076-25:2023)

This European Standard was approved by CENELEC on 2023-03-30. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 60076-25:2023 (E)

European foreword

The text of document 14/1097/FDIS, future edition 1 of IEC 60076-25, prepared by IEC/TC 14 "Power transformers" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60076-25:2023.

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)	2023-12-30
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2026-03-30

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 60076-25:2023 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60068-3-3	NOTE	Approved as EN IEC 60068-3-3
IEC 60071-1	NOTE	Approved as EN IEC 60071-1
IEC 60076-1	NOTE	Approved as EN 60076-1
IEC 60664-1	NOTE	Approved as EN IEC 60664-1
IEC 62271-1	NOTE	Approved as EN 62271-1

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where 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.cencenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60060-1	2010	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	2010
IEC 60071-2	-	Insulation co-ordination - Part 2: Application guidelines	EN IEC 60071-2	-
IEC 60076-3	2013	Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air	EN 60076-3	2013
+ A1	2018		+ A1	2018
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May	1993
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013

IEC 60076-25

Edition 1.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Power transformers – Part 25: Neutral grounding resistors

Transformateurs de puissance – Partie 25: Résistances de mise à la terre du neutre

IEC 60076-25:2023-02(en-fr)

IEC 60076-25

Edition 1.0 2023-02

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Power transformers – Part 25: Neutral grounding resistors

Transformateurs de puissance – Partie 25: Résistances de mise à la terre du neutre

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 29.180

ISBN 978-2-8322-6431-7

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

POWER TRANSFORMERS –

Part 25: Neutral grounding resistors

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.

IEC 60076-25 has been prepared by IEC technical committee 14: Power transformers. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
14/1097/FDIS	14/1101/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60076 series, published under the general title *Power transformers*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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

POWER TRANSFORMERS –

Part 25: Neutral grounding resistors

1 Scope

This part of IEC 60076 applies to dry type natural air-cooled resistors, for neutral grounding of transformers and generators, in order to limit the earth fault current in power systems by means of metallic resistive elements.

For the purposes of this document, the resistor can be:

- used alone or in combination with other electrotechnical products not covered by this document, such as (but not limited to): a step-down single-phase transformer, an open triangle or zig-zag transformer (where the neutral point is not available) and a Petersen coil reactor (in order to increase active power contribution to the fault or reduce time constant for proper protection operation or both);
- designed, manufactured and verified on a one-off basis or fully standardized and manufactured in quantity.

Both terms "neutral grounding resistor" (NGR) and "neutral earthing resistor" (NER) can be used. However, for the purposes of this document and in order to avoid any confusion with "neutral earthing reactor" (NER), the term "neutral grounding resistor" (NGR) is used.

This document specifies:

- the characteristics of the NGR;
- the service conditions requirements for NGRs;
- the tests and test methods for confirming that these conditions have been met;
- the requirements relating to marking for NGRs.

Annex A provides guidance on how to consider the effect of resistance variation with temperature.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

IEC 60060-1:2010, *High voltage test techniques – Part 1: General definitions and test requirements*

IEC 60071-2, *Insulation co-ordination – Part 2: Application guidelines*

IEC 60076-3:2013, *Power transformers – Part 3: Insulation levels, dielectric tests and external clearances in air*
IEC 60076-3:2013/AMD1:2018

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*
IEC 60529/AMD1:1999
IEC 60529/AMD2:2013