SLOVENSKI STANDARD
SIST EN IEC 60076-22-1:2019

01-julij-2019

Močnostni transformatorji - 22-1. del: Oprema močnostnega transformatorja in dušilke - Zaščitne naprave

Power transformers - Part 22-1: Power transformer and reactor fittings – Protective devices

Leistungstransformatoren und Drosselspulen Anbauten - Teil 22-1: Schutzeinrichtungen

Transformateurs de puissance - Partie 22-1: Accessoires pour transformateurs de puissance et bobines d'inductance - Dispositifs de protection

Ta slovenski standard je istoveten z: EN IEC 60076-22-1:2019

ICS:

29.180	Transformatorji. Dušilke	Transformers. Reactors

SIST EN IEC 60076-22-1:2019 en

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 60076-22-1

March 2019

ICS 29.180

English Version

Power transformers - Part 22-1: Power transformer and reactor fittings - Protective devices (IEC 60076-22-1:2019)

Transformateurs de puissance - Partie 22-1: Accessoires pour transformateurs de puissance et bobines d'inductance - Dispositifs de protection (IEC 60076-22-1:2019)

Leistungstransformatoren und Drosselspulen Anbauten - Teil 22-1: Schutzeinrichtungen (IEC 60076-22-1:2019)

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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

Ref. No. EN IEC 60076-22-1:2019 E

European foreword

The text of document 14/992/FDIS, future edition 1 of IEC 60076-22-1, prepared by IEC/TC 14 "Power transformers" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60076-22-1:2019.

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)	2019-12-05
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2022-03-05

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.

Endorsement notice

The text of the International Standard IEC 60076-22-1:2019 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 standards indicated:

IEC 60076-6	NOTE	Harmonized as EN 60076-6
IEC 60255-27	NOTE	Harmonized as EN 60255-27
ISO 9001	NOTE	Harmonized as EN ISO 9001

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.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 60068-3-3	1991	Environmental testing - Part 3-3: Guidance - Seismic test methods for equipments	EN 60068-3-3	1993
IEC 60076-1	2011	Power transformers - Part 1: General	EN 60076-1	2011
IEC 60076-7	-	Power transformers -- Part 7: Loading guide for oil-immersed power transformers	-	-
IEC 60296	-	Fluids for electrotechnical applications - Unused mineral insulating oils for transformers and switchgear	EN 60296	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60721-3-4	-	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Section 4: Stationary use at non-weatherprotected locations	EN 60721-3-4	-
IEC 60947-5-1	-	Low-voltage switchgear and controlgear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices	EN 60947-5-1	-
ISO 228-1	-	Pipe threads where pressure-tight joints are not made on the threads -- Part 1: Dimensions, tolerances and designation	EN ISO 228-1	-
ISO 12944-6	-	Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 6: Laboratory performance test methods	EN ISO 12944-6	-

IEC 60076-22-1

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Power transformers –
Part 22-1: Power transformer and reactor fittings – Protective devices

Transformateurs de puissance –
Partie 22-1: Accessoires pour transformateurs de puissance et bobines d'inductance – Dispositifs de protection

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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POWER TRANSFORMERS –

Part 22-1: Power transformer and reactor fittings – Protective devices

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.
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International Standard IEC 60076-22-1 has been prepared by IEC technical committee TC14: Power transformers.

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

FDIS	Report on voting
14/992/FDIS	14/997/RVD

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

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This Part 22-1 of the IEC 60076 series covers all accessories relevant to the safety of transformers or reactors and having a function of signalization of abnormal operating conditions, and outlines the operation requirements specific to each accessory.

POWER TRANSFORMERS –

Part 22-1: Power transformer and reactor fittings – Protective devices

1 Scope

This part of IEC 60076-22 applies to protective devices mounted on liquid-immersed power transformers in accordance with IEC 60076-1 and reactors in accordance with IEC 60076-6 with or without conservator for indoor or outdoor installation. It outlines the service conditions and the mechanical and electrical requirements that are common to all the devices, which are relevant for the safety of the machine having a function of signalization of abnormal operating conditions.

It also outlines the operation requirements specific to each device as well as, in some cases, the preferred dimensions relevant for interchangeability and the type and routine test to be performed.

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 60068-3-3:1991, *Environmental testing – Part 3-3: Guidance – Seismic test methods for equipments*

IEC 60076-1:2011, *Power transformers – Part 1: General*

IEC 60076-7, *Power transformers – Part 7: Loading guide for oil-immersed power transformers*

IEC 60296, *Fluids for electrotechnical applications –Unused mineral insulating oils for transformers and switchgear*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60721-3-4, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Section 4: Stationary use at non-weatherprotected locations*

IEC 60947-5-1, *Low-voltage switchgear and control gear – Part 5-1: Control circuit devices and switching elements – Electromechanical control circuit devices*

ISO 228-1*Pipe threads where pressure-tight joints are not made on the threads – Part 1: Dimensions, tolerances and designation*

ISO 12944-6, *Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Part 6: Laboratory performance test methods*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
gas and liquid actuated relay
Buchholz relay
device intended to detect gas release from the unit to be protected, liquid surge from the tank to the conservator and complete loss of liquid in the conservator

3.2
gas and liquid sampling device at man's height
device allowing gas and liquid sampling from the Buchholz relay from ground level

3.3
protective relay for hermetically sealed liquid-immersed equipment
multifunctional protective device for hermetically sealed, liquid-immersed equipment without gas cushion

3.4
direct reading dial type liquid level indicator
oil level indicator
OLI
device indicating the liquid level in the main conservator or in a separate compartment

Note 1 to entry: This note applies to the French language only.

3.5
liquid flow indicator
oil flow indicator
OFI
device that detects the liquid flow in a forced cooling system

Note 1 to entry: This note applies to the French language only.

3.6
pressure relief device
PRD
device that releases the internal overpressure over a pre-set value, on medium and large power transformers

Note 1 to entry: This note applies to the French language only.

3.7
pressure relief valve
PRV
device that releases the internal overpressure over a pre-set value, on small transformers

Note 1 to entry: This note applies to the French language only.