Power transformers - Additional European requirements - Part 2-1: Medium power transformer - General requirements
EESTI STANDARDI EESSÕNA


Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.

Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 22.05.2020.

Standard on kättesaadav Eesti Standardikeskusest.

NATIONAL FOREWORD


This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.

Date of Availability of the European standard is 22.05.2020.

The standard is available from the Estonian Centre for Standardisation.

ICS 29.180

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardioskond@evs.ee.

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee
English Version

Power transformers - Additional European requirements: Part 2-1
Medium power transformer - General requirements

This European Standard was approved by CENELEC on 2019-10-09. 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, Turkey and the United Kingdom.

© 2020 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.
Contents

European foreword ......................................................................................................... 3
Introduction .................................................................................................................... 4
1 Scope ...................................................................................................................... 5
2 Normative references ............................................................................................... 5
3 Terms and definitions ............................................................................................... 5
4 Service conditions .................................................................................................... 5
5 Rating and general requirements .............................................................................. 5
  5.1 General........................................................................................................... 5
    5.1.1 Highest voltages for equipment for winding with \( U_m > 1.1 \text{kV} \) .............. 5
    5.1.2 Rated voltage for winding with \( U_m \leq 1.1 \text{kV} \) ......................................... 5
    5.1.3 Tapping ............................................................................................... 6
    5.1.4 Connection designations for three phase transformers ........................ 6
  5.2 Energy Performance ....................................................................................... 6
    5.2.1 General ............................................................................................... 6
    5.2.2 Transformers with special requirements .............................................. 9
6 Rating plate............................................................................................................ 11
7 Tolerances during factory acceptance tests ............................................................ 11
8 Tests ...................................................................................................................... 11
9 Accessories and fittings ......................................................................................... 11
10 Capitalization losses .............................................................................................. 11
11 Transformers overhaul ........................................................................................... 11

European foreword

This document (EN 50708-2-1:2020) has been prepared by CLC/TC 14 "Power transformers".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2020-11-22
• latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2023-05-22

This document supersedes EN 50588-1:2017 and all of its amendments and corrigenda (if any).

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.

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(s).

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

For the purpose of this document, the requirements of the general EN 50708-1-1:2020 apply.

This document contains particular requirements for specific transformers or transformer applications, which are based on the requirements of the general EN 50708-1-1:2020.

This document should be considered in conjunction with the requirements of the general parts.

The particular requirements of the different subparts of EN 50708 supplement, modify or replace certain requirements of the general parts of EN 50708-1 and/or EN 50708-1-X being valid at the time of publication of this document. The absence of references to the exclusion of a part or a clause of a general part means that the corresponding clauses of the general part are applicable (undated reference).

Requirements of other -X parts with X greater than 1 being eventually relevant for cases covered by this document also apply. This document could therefore also supplement, modify or replace certain of these requirements valid at the time of publication of this document.

The main clause numbering of each part follows the pattern and corresponding references of EN 50708-1-1:2020. The numbers following the particular number of this document are those of the corresponding parts, or clauses of the other parts of the EN 50708 series, valid at the time of publication of this document, as indicated in the normative references of this document (dated reference).

In the case where new or amended general parts with modified numbering were published after the subpart was issued, the clause numbers referring to a general part in subparts might no longer align with the latest edition of the general part. Dated references should be observed.
1 Scope

The scope of this document is to define the energy performance of Medium Power Transformers in compliance with EN 50708-1-1:2020.

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.

EN 50708-1-1:2020, Power transformers - Additional European requirements: Part 1-1: Common part - General requirements
EN 60076-1:2011, Power transformers - Part 1: General
EN 60076-3:2013, Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air
EN IEC 60076-11:2018, Power transformers - Part 11: Dry-type transformers

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50708-1-1:2020 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:
— ISO Online browsing platform: available at http://www.iso.org/obp

4 Service conditions

See EN 60076-1:2011.

5 Rating and general requirements

5.1 General

5.1.1 Highest voltages for equipment for winding with $U_m > 1,1$ kV

Insulation levels and dielectric test shall be in accordance with the requirements of EN 60076-3:2013 and for dry type transformers in accordance with EN IEC 60076-11:2018.

The values of the highest voltage $U_m$ for equipment are:

- 3,6 kV – 7,2 kV – 12 kV – 17,5 kV – 24 kV – 36 kV

NOTE National practices might require the use of highest voltages for equipment up to (but not including) 52 kV, when the rated voltage is less than 36 kV (such as $U_m = 38,5$ kV or $U_m = 40,5$ kV).

5.1.2 Rated voltage for winding with $U_m \leq 1,1$ kV

For $U_m \leq 1,1$ kV, the preferred rated voltage value shall be chosen in the hereunder list:


This document may be applied either as a whole or in part, to transformers with rated low voltages below 400 V and above 690 V.