

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Power transformers –
Part 5: Ability to withstand short circuit**

**Transformateurs de puissance –
Partie 5: Tenue au court-circuit**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

POWER TRANSFORMERS –**Part 5: Ability to withstand short circuit**

FOREWORD

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International Standard IEC 60076-5 has been prepared by IEC technical committee 14: Power transformers.

This third edition cancels and replaces the second edition published in 2000. This third edition constitutes a technical revision.

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

- a) introduction of Annex A (informative) – "Theoretical evaluation of the ability to withstand the dynamic effects of short circuit", in place of previous Annex B (normative) – "Calculation method for the demonstration of the ability to withstand short circuit" (blank);
- b) introduction of Annex B (informative) – "Definition of similar transformer", in place of previous Annex A (informative) – "Guidance for the identification of a similar transformer".

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

FDIS	Report on voting
14/518/FDIS	14/523/RVD

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.

IEC 60076 consists of the following parts, under the general title *Power transformers*:

- Part 1: General
- Part 2: Temperature rise
- Part 3: Insulation levels, dielectric tests and external clearances in air
- Part 4: Guide to the lightning impulse and switching impulse testing – Power transformers and reactors
- Part 5: Ability to withstand short circuit
- Part 6: Reactors¹
- Part 7: Loading guide for oil-immersed power transformers
- Part 8: Application guide
- Part 10: Determination of sound levels
- Part 10-1: Determination of sound levels – Application guide
- Part 11: Dry-type transformers
- Part 12: Loading guide for dry-type power transformers¹
- Part 13: Self-protected liquid-filled transformers
- Part 14: Design and application of liquid-immersed power transformers using high-temperature insulation materials
- Part 15: Gas-filled-type power transformers¹

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

¹ Under consideration.

POWER TRANSFORMERS –

Part 5: Ability to withstand short circuit

1 Scope

This part of IEC 60076 identifies the requirements for power transformers to sustain without damage the effects of overcurrents originated by external short circuits. It describes the calculation procedures used to demonstrate the thermal ability of a power transformer to withstand such overcurrents and both the special test and the theoretical evaluation method used to demonstrate the ability to withstand the relevant dynamic effects. The requirements apply to transformers as defined in the scope of IEC 60076-1.

2 Normative references

The following referenced documents are indispensable for the application 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 60076-1:1993, *Power transformers – Part 1: General*
Amendment 1 (1999)²

IEC 60076-3:2000, *Power Transformers – Part 3: Insulation levels, dielectric tests and external clearances in air*

IEC 60076-8:1997, *Power transformers – Part 8: Application guide*

IEC 60076-11:2004, *Power transformers – Part 11: Dry-type transformers*

3 Requirements with regard to ability to withstand short circuit

3.1 General

Transformers together with all equipment and accessories shall be designed and constructed to withstand without damage the thermal and dynamic effects of external short circuits under the conditions specified in 3.2.

External short circuits are not restricted to three-phase short circuits; they include line-to-line, double-earth and line-to-earth faults. The currents resulting from these conditions in the windings are designated as overcurrents in this part of IEC 60076.

² There exists a consolidated edition 2.1 (2000) that includes edition 2.0 and its amendment.