



BSI Standards Publication

Rotating electrical machines

Part 4-1: Methods for determining electrically excited synchronous machine quantities from tests

This is a preview of "BS EN IEC 60034-4-1:2018". [Click here to purchase the full version from the ANSI store.](#)

National foreword

This British Standard is the UK implementation of EN IEC 60034-4-1:2018. It is identical to IEC 60034-4-1:2018. It supersedes BS EN 60034-4:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PEL/2, Rotating electrical machinery.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Rotating electrical machines - Part 4-1: Methods for determining electrically excited synchronous machine quantities from tests (IEC 60034-4-1:2018)

Machines électriques tournantes - Partie 4-1: Méthodes pour la détermination, à partir d'essais, des grandeurs des machines synchrones à excitation électrique
(IEC 60034-4-1:2018)

Drehende elektrische Maschinen - Teil 4-1: Verfahren zur Ermittlung der Kenngrößen von Synchronmaschinen durch Messungen
(IEC 60034-4-1:2018)

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European foreword

The text of document 2/1829/CDV, future edition 1 of IEC 60034-4-1, prepared by IEC/TC 2 "Rotating machinery" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60034-4-1:2018.

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) 2019-03-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-06-01

This document supersedes EN 60034-4:2008

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(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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60034-1	2017	Rotating electrical machines - Part 1:- Rating and performance		-
IEC 60034-2-1	-	Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	EN 60034-2-1	-
IEC 60051	series	Direct acting indicating analogue electrical measuring instruments and their accessories	EN 60051	series

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

**Part 4-1: Methods for determining electrically excited
synchronous machine quantities from tests**

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 60034-4-1 has been prepared by IEC technical committee 2: Rotating machinery.

IEC 60034-4-1 first edition cancels and replaces the third edition of IEC 60034-4 published in 2008. This edition constitutes a technical revision.

This publication includes the following significant technical changes with respect to IEC 60034-4 edition 3:

- a) improvement of several procedures with respect to evaluation of quantities;
- b) deletion of uncommon procedures;
- c) applicability of procedures for permanent magnet machines.

This is a preview of "BS EN IEC 60034-4-1:....". [Click here to purchase the full version from the ANSI store.](#)

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

CDV	Report on voting
2/1829/CDV	2/1869/RVC

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.

NOTE A table of cross-references of all IEC TC 2 publications can be found on the IEC TC 2 dashboard 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 "<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.

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ROTATING ELECTRICAL MACHINES –

Part 4-1: Methods for determining electrically excited synchronous machine quantities from tests

1 Scope

This part of IEC 60034 applies to three-phase synchronous machines of 1 kVA rating and larger.

Most of the methods are intended to be used for machines having an excitation winding with slip-rings and brushes for their supply. Synchronous machines with brushless excitation require special effort for some of the tests. For machines with permanent magnet excitation, there is a limited applicability of the described tests, and special precautions should be taken against irreversible demagnetization.

Excluded are axial-field machines and special synchronous machines such as inductor type machines, transversal flux machines and reluctance machines.

It is not intended that this document be interpreted as requiring any or all of the tests described therein on any given machine. The particular tests to be carried out are subject to agreement between manufacturer and customer.

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 60034-1:2017, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-2-1, *Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

IEC 60051 (all parts), *Direct acting indicating analogue electrical measuring instruments and their accessories*

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

<synchronous motors> initial starting impedance

quotient of the applied armature voltage and the sustained average armature current, the machine being at standstill