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Rotating electrical machines - Part 20-1: Control motors - Stepping motors (IEC/TS
60034-20-1:2002)

Drehende elektrische Maschinen - Teil 20-1: Servomotoren - Schrittmotoren (IEC/TS
60034-20-1:2002)

Machines électriques tournantes - Partie 20-1: Moteurs de commande - Moteurs pas à
pas (CEI/TS 60034-20-1:2002)

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Ta slovenski standard je istoveten z: CLC/TS 60034-20-1:2004

ICS:

29.160.30 Motorji Motors

SIST-TS CLC/TS 60034-20-1:2005 en

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TECHNICAL SPECIFICATION

CLC/TS 60034-20-1

SPECIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

September 2004

ICS 29.160.30

English version

Rotating electrical machines
Part 20-1: Control motors -
Stepping motors
(IEC/TS 60034-20-1:2002)

Machines électriques tournantes
Partie 20-1: Moteurs de commande -
Moteurs pas à pas
(CEI/TS 60034-20-1:2002)

Drehende elektrische Maschinen
Teil 20-1: Servomotororen -
Schrittmotoren
(IEC/TS 60034-20-1:2002)

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This Technical Specification was approved by CENELEC on 2004-07-03.
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CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of the Technical Specification IEC/TS 60034-20-1:2002, prepared by IEC TC 2, Rotating machinery, was submitted to the formal vote and was approved by CENELEC as CLC/TS 60034-20-1 on 2004-07-03 without any modification.

The following date was fixed:

- latest date by which the existence of the CLC/TS
has to be announced at national level (doa) 2005-01-03

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the Technical Specification IEC/TS 60034-20-1:2002 was approved by CENELEC as a Technical Specification without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60034-1 (mod)	1996	Rotating electrical machines	EN 60034-1	1998 ¹⁾
A1	1997	Part 1: Rating and performance	A1	1998
A2	1999		A2	1999
			+ A11	2002
IEC 60034-7	- ²⁾	Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM Code)	EN 60034-7	1993 ³⁾
IEC 60072-1	1991	Dimensions and output series for rotating electrical machines Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1 080	-	-
IEC 60072-3	1994	Part 3: Small built-in motors. Flange numbers BF10 to BF50	-	-

[SIST-TS CLC/TS 60034-20-1:2005](https://standards.iteh.ai/catalog/standards/sist/9ea8ceb1-1ca7-45e3-9854-b3409e49f14e/sist-ts-clc-ts-60034-20-1-2005)

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¹⁾ EN 60034-1:1998 is superseded by EN 60034-1:2004, which is based on IEC 60034-1:2004.

²⁾ Undated reference.

³⁾ Valid edition at date of issue.

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SPÉCIFICATION TECHNIQUE

**CEI
IEC**

TECHNICAL SPECIFICATION

TS 60034-20-1

Première édition
First edition
2002-01

Machines électriques tournantes –

Partie 20-1: Moteurs de commande – Moteurs pas à pas

iTeh STANDARD PREVIEW

Rotating electrical machines –

Part 20-1: TS CLC/TS 60034-20-1:2005

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Control motors – Stepping motors

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International Electrotechnical Commission
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland
e-mail: inmail@iec.ch IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –**Part 20-1: Control motors – Stepping motors**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The 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 the 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 National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
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The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical specification when

- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- The subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

IEC 60034-20-1, which is a technical specification, has been prepared by IEC technical committee 2: Rotating machinery.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
2/1111/DTS	2/1153A/RVC

Full information on the voting for the approval of this technical specification 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.

Annexes A and B are for information only.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

- transformed into an International Standard;
- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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ROTATING ELECTRICAL MACHINES –

Part 20-1: Control motors – Stepping motors

1 Scope

This technical specification gives the requirements for rotating control motors and describes the appropriate tests. It also gives dimensions and marking information and the details to be provided by the manufacturer in associated data sheets and catalogues.

This technical specification is applicable to rotating stepping motors only.

It is not applicable to:

- induction motors;
- hydraulic and ratchet type stepping motors;
- linear motors;
- mechanically commutated motors;
- synchronous motors.

2 Normative references (standards.iteh.ai)

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 60034-1:1996, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-7, *Rotating electrical machines – Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM code)*

IEC 60072-1:1991, *Dimensions and output series for rotating electrical machines – Part 1: Frame numbers 56 to 400 and flange numbers 55 to 1080*

IEC 60072-3:1994, *Dimensions and output series for rotating electrical machines – Part 3: Small built-in motors – Flange numbers BF10 to BF50*

3 Definitions

For the purpose of this technical specification, the following definitions apply.

3.1

axial thrust

force applied to a shaft along its axis of rotation

3.2

bipolar drive

stepping motor drive system in which the excitation applied is such that the torque generating current reverses in the windings

3.3

canstack construction (claw pole)

permanent magnet motor having two or more coils held in position by a pair of endshields having interlaced claws or teeth

3.4

cogging torque

cyclic torque in an unenergized motor resulting from the tendency of the rotor and stator to align themselves in a position of minimum magnetic reluctance

3.5

commutation

process of sequentially exciting the windings of a motor such that the relative angle between the magnetic fields of the stator and rotor is maintained within specified limits

NOTE Commutation is accomplished either mechanically or electronically.

3.6

continuous stall torque, T_{cs}

maximum continuous output torque that the stalled motor can develop under specified conditions

3.7

counter e.m.f. (back e.m.f.), E_g

generated voltage produced by the relative movement between the magnetic field and the armature winding

NOTE 1 It is normally stated as a peak (pk) or a root mean square (r.m.s.) value.

NOTE 2 The nature of the voltage value, i.e. whether peak, or r.m.s. should be declared.

3.8

counter e.m.f. constant (back e.m.f. constant), K_E

counter e.m.f. per unit of speed at a specified motor temperature

3.9

detent position

position where the rotor of a permanent magnet motor or hybrid stepping motor comes to rest when unenergized and unloaded

3.10

detent torque

maximum steady torque that can be applied to the shaft of an unenergized permanent magnet or hybrid stepping motor without causing continuous rotation