



DPC: 24 / 30506215 DC

BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

Date: 13 December 2024

Origin: International

Latest date for receipt of comments: 1 January 2025

Project No. 2024/03553

Responsible committee: PEL/2 Rotating electrical machinery

Interested committees:

Title: BS EN IEC 60034-30-2 Rotating electrical machines

Part 30-2: Efficiency classes of variable speed AC motors (IE-code)

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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Responsible Committee Secretary: **Committee Service Centre (BSI)**
Direct tel: **020 8996 7009**
E-mail: csc@bsigroup.com

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



2/2221/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER: IEC 60034-30-2 ED2	
DATE OF CIRCULATION: 2024-12-06	CLOSING DATE FOR COMMENTS: 2025-01-31
SUPERSEDES DOCUMENTS: 2/2216/RR	

IEC TC 2 : ROTATING MACHINERY	
SECRETARIAT: United Kingdom	SECRETARY: Mr Charles Whitlock
OF INTEREST TO THE FOLLOWING COMMITTEES:	HORIZONTAL FUNCTION(S):
ASPECTS CONCERNED:	

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Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE: Rotating electrical machines - Part 30-2: Efficiency classes of variable speed AC motors (IE-code)

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

Part 30-2: Efficiency classes of variable speed AC motors (IE-code)

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- 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.

International Standard IEC 60034-30-2 has been prepared by IEC Technical Committee 2: Rotating machinery.

This first edition of the standard IEC 60034-30-2 cancels and replaces the first edition of IEC TS 60034-30-2 (2016). 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.

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

Enquiry draft	Report on voting
2/XX/DTS	2/XX/RVC

98
99 Full information on the voting for the approval of this standard can be found in the report on
100 voting indicated in the above table.

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

102 NOTE A table of cross-references of all IEC TC 2 publications can be found on the IEC TC 2 dashboard on the
103 IEC website.

104 The committee has decided that the contents of this document will remain unchanged until the
105 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to
106 the specific document. At this date, the document will be

- 107 • reconfirmed,
- 108 • withdrawn,
- 109 • replaced by a revised edition, or
- 110 • amended.

111

112 The National Committees are requested to note that for this document the stability date
113 is 20xx

114 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE
115 DELETED AT THE PUBLICATION STAGE.

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INTRODUCTION

119 This second part of the 60034-30 standard series, 60034-30-2, replaces the technical
120 specification and provides energy-efficiency classes of variable speed electric motors for the
121 global harmonization. It deals with all types of AC low-voltage electric motors that are rated
122 for variable speed operation in their constant magnetic-flux speed-range (base speed-range).
123 An electronic frequency converter provides variable voltage and variable frequency.

124 This standard regard energy efficiency classification of converter duty AC motors rated for
125 variable voltage and frequency, namely VSD only induction motors and synchronous motors
126 not covered in IEC 60034-30-1. It is harmonized with the standard IEC 61800-9-2 where IE-
127 classifications of frequency converters (variable speed drive VSD or complete drive modules
128 = CDM) and IES-classifications of power drive systems (PDS) are defined.

129 An efficient motor alone does not necessarily result in an efficient PDS. Users should select
130 the efficiency class in accordance with a given application depending on the actual load /
131 speed operating points and related operating time.

132 It may not be energy efficient to select very high efficiency continuous duty, S1, motors for
133 intermittent or short time duty or part load applications. The use of the Extended Product
134 Approach (EPA) as described in the standard series IEC 61800-9 will help applicative sectors
135 for specification of energy efficiency performance of power-driven equipment and parts.

136 It is not expected that all manufacturers will produce motors for all efficiency classes nor all
137 ratings of a given class.

138 IE-codes are not limited to motors but may in future be used to classify other components
139 such as frequency converters and gearboxes. However, it is anticipated that other
140 components are rated with a comparable system: IE1 meaning low efficiency up to IE7
141 meaning the highest efficiency.

142

ROTATING ELECTRICAL MACHINES –

Part 30-2: Efficiency classes of variable speed AC motors (IE-code)

1 Scope

This part of IEC 60034, specifies efficiency classes for variable speed rotating electric machines not covered in IEC 60034-30-1.

The document only applies to machines that:

- have a rated power P_N from 0,12 kW to 1 000 kW;
- have a rated voltage U_N above 50 V up to 1 kV;
- have a rated speed n_N from 600 1/min up to 6 000 1/min regardless of the number of magnetic poles;
- are designed for cooling methods IC4A1A0 (IC410), IC4A1A1 (IC411), IC4A1A6 (IC416), or IC4A1A8 (IC418) according to IEC 60034-6;
- are capable of continuous operation at their rated operating point (torque/power, speed) with a temperature rise within the specified insulation temperature class;

NOTE 1 Most motors covered by this document are rated for duty type S1 (continuous duty). However, some motors that are rated for other duty cycles are still capable of continuous operation at their rated power and these motors are also covered. Motors rated between S3 and S10 with a cycle time of 80 % or more may be included.

- are rated for any ambient temperature within the range of – 20°C to + 60°C;

NOTE 3 Motors rated for temperatures outside the range – 20°C and + 60°C are considered to be of special construction and are consequently excluded from this document.

NOTE 4 Smoke extraction motors with a temperature class of up to and including 400 °C are covered by this document.

- are rated for an operating altitude up to 4 000 m above sea level.

NOTE 5 The rated efficiency and efficiency class are based on a rating for altitudes up to 1 000 m above sea level.

The classification only covers machines designed for operation with sinusoidal fundamental current that are not designed to be operated direct-on-line (grid), for example permanent magnet synchronous machines with and without additional reluctance torque, sinusoidal reluctance synchronous machines and synchronous machines with DC field windings. This also includes induction machines that are designed exclusively for variable speed operation.

The procedures to determine losses at any speed and load point are given in IEC 60034-2-3. They apply to all converter operated motors.

No distinction is made between motor technologies, supply voltage or motors with increased insulation even though these motor technologies may not all be capable of reaching the higher efficiency classes. This makes different motor technologies fully comparable with respect to their energy efficiency potential.

The efficiency of power-drive systems (i.e. the combined losses of motor and power supply) and the losses of the driven load are not covered by this document, see IEC 61800-9-2.

Covered in this document are also:

- Motors with flanges, feet and/or shafts with mechanical dimensions different from IEC 60072-1.