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Interested committees:

Title: BS EN IEC 60034-8 Rotating electrical machines  
Part 8: Terminal markings and direction of rotation

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## 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.

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## 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 Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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## Template for comments and secretariat observations

|                  |                        |
|------------------|------------------------|
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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.                                       |                                                    |



2/2202/CD

COMMITTEE DRAFT (CD)

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**2/2191/RR**

IEC TC 2 : ROTATING MACHINERY

SECRETARIAT:

United Kingdom

SECRETARY:

Mr Charles Whitlock

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:



Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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TITLE:

**Rotating electrical machines - Part 8: Terminal markings and direction of rotation**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## ROTATING ELECTRICAL MACHINES –

## Part 8: Terminal markings and direction of rotation

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**IEC 60034-8 edition 4 contains IEC 60034-8 edition 3.1 which contains the third edition (2007-06) [documents 2/1434/FDIS and 2/1451/RVD] and its amendment 1 (2014-03) [documents 2/1732/FDIS and 2/1743/RVD].**

~~This Final version does not show where the technical content is modified by amendment 1. A separate Redline version with all changes highlighted is available in this publication.~~

157 International Standard IEC 60034-8 has been prepared by IEC technical committee 2:  
158 Rotating machinery.

159 The main change with respect to the previous edition is listed below:

160 - The inclusion of Turbine-type synchronous machines in the scope

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

162 A list of all the parts of the IEC 60034 series, under the general title *Rotating electrical*  
163 *machines*, can be found on the IEC website.

164 The committee has decided that the contents of the base publication and its amendment will  
165 remain unchanged until the stability date indicated on the IEC web site under  
166 "http://webstore.iec.ch" in the data related to the specific publication. At this date, the  
167 publication will be

- 168 • reconfirmed,
- 169 • withdrawn,
- 170 • replaced by a revised edition, or
- 171 • amended.

172

173

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175

176

## INTRODUCTION

177 The revision of this part of IEC 60034 provides worldwide uniformity in the electrical  
178 connections for rotating electrical machines and applies the recommendations of the basic  
179 safety publication IEC 60445 in specifying marking requirements.

180 These standardized connections will then permit the safe interchange of electric machines  
181 with their control and protective devices using standardized terminal markings.

182 **Note: electrical connections of the machines are not the unique feature to be checked for safe**  
183 **interchange.**

184

# ROTATING ELECTRICAL MACHINES –

## Part 8: Terminal markings and direction of rotation

### 1 Scope

This part of IEC 60034 applies to a.c. and d.c. machines and specifies

- a) rules for the identification of winding connection points;
- b) marking of winding terminals;
- c) direction of rotation;
- d) relationship between terminal markings and direction of rotation;
- e) terminal marking of auxiliary devices;
- f) connection diagrams of machines for common applications.

~~Turbine-type synchronous machines are excluded from this standard.~~

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

~~IEC60034-3, *Rotating electrical machines - Part 3: Specific requirements for synchronous generators driven by steam turbines or combustion gas turbines and for synchronous compensators*~~

~~IEC60034-33, *Rotating electrical machines - Part 33: Synchronous hydrogenerators including motor-generators - Specific requirements*~~

IEC 60417-1, *Graphical symbols for use on equipment – Part 1: Overview and application*

IEC 60445, *Basic and safety principles for man-machine interface, marking and identification – Identification of equipment terminals and conductor terminations*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60034-1 and the following apply.

#### 3.1 terminal marking

permanent identification of the external termination of winding leads or auxiliary leads at the disposal of the user for connection of the machine to the supply or apparatus that indicates the function of the termination

#### 3.2 connecting points

all current transfer points that are used to permanently interconnect winding or winding element ends internally

- 226 **3.3**  
227 **tapping points**  
228 intermediate connections to a portion of a winding element
- 229 **3.4**  
230 **winding leads**  
231 insulated conductors that make the electrical connection between a winding and its  
232 termination
- 233 **3.5**  
234 **winding**  
235 assembly of turns or coils having a defined function in an electrical rotating machine  
236 [IEV 411-37-01]
- 237 **3.6**  
238 **winding phase**  
239 one or more winding elements associated with a particular phase
- 240 **3.7**  
241 **winding element**  
242 part of a winding, all the turns or coils in that part being permanently connected together
- 243 **3.8**  
244 **separate windings**  
245 two or more windings, each having a separate function, and not interconnected, used only  
246 separately, whether fully or in part
- 247 **3.9**  
248 **multi-speed motor**  
249 motor, which can be operated at any one of two or more definite speeds
- 250 **3.10**  
251 **constant power**  
252 when a multi-speed motor provides approximately constant power over the speed range
- 253 **3.11**  
254 **constant torque**  
255 when a multi-speed motor provides approximately constant torque over the speed range
- 256 **3.12**  
257 **variable torque**  
258 when output torque of a multi-speed motor is proportional to approximately the square of the  
259 speeds
- 260 **3.13**  
261 **phase sequence**  
262 order in which the voltages successively reach their maximum positive values between supply  
263 conductors  
264

**3.14****D-end**

that end of the machine which accommodates the shaft end

[IEV 411-43-36]

NOTE For machines having two shaft ends, the D-end is the end

a) having the larger diameter;

b) opposite the external fan when the shaft ends are of the same diameter.

**4 Symbols****4.1 General**

|              |                                                              |
|--------------|--------------------------------------------------------------|
| L            | Supply conductor                                             |
| PE           | Protective earthing terminal                                 |
| ○ —          | User available terminal, marking mandatory                   |
| — ● —        | Internal connection point                                    |
| (...)        | Internal terminal marking (showing element symbol), optional |
| [ ..., ... ] | Grouping of user joined terminals                            |
| ;            | Separation of terminals or groups of terminals               |

**4.2 DC and single-phase commutator machines**

|   |                                   |
|---|-----------------------------------|
| A | Armature winding                  |
| B | Commutating winding               |
| C | Compensating winding              |
| D | Series excitation winding         |
| E | Shunt excitation winding          |
| F | Separately excited winding        |
| H | Direct-axis auxiliary winding     |
| J | Quadrature-axis auxiliary winding |

**4.3 AC machines without commutator**

|   |                                                       |
|---|-------------------------------------------------------|
| F | DC excitation winding                                 |
| K | Secondary winding                                     |
| L | Secondary winding                                     |
| M | Secondary winding                                     |
| N | Star point (neutral conductor) of the primary winding |
| Q | Star point (neutral conductor) of a secondary winding |
| U | Primary winding                                       |
| V | Primary winding                                       |
| W | Primary winding                                       |
| Z | Auxiliary windings                                    |

NOTE The primary and secondary symbol allocations are irrespective of whether the primary winding is located in the stator or rotor. **Different symbols can be used as agreed between the Manufacturer and the Purchaser.**