**IS/IEC 60034-2-1: 2024**

***भारतीय मानक Indian Standards***

 [Superseding IS 15999 (Part 2/Sec 1): 2023]

**विद्युत घूर्णिय मशीन**

**भाग 2 परीक्षण के द्वारा क्षति और दक्षता का निर्धारण**

**अनुभाग 1 मानक तरीके (संकर्षण वाहनों की मशीनों को छोड़कर )**

*(दूसरा पुनरीक्षण)*

**Rotating Electrical Machines**

**Part 2 for Determining Losses and Efficiency from Tests**

**Section 1 Standard Methods (Excluding Machines for Traction Vehicles)**

*(Second Revision)*

ICS 29.160.01

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भारतीय मानक ब्यूरो

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**November 2024 Price Group**

Rotating MachinerySectional Committee, ETD 15

NATIONAL FOREWORD

This Indian Standard (Second Revision) which is identical with IEC 60034-2-1: 2024 ‘Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)’ issued by the International Electrotechnical Commission (IEC) was adopted by the Bureau of Indian Standards on the recommendation of the Rotating MachinerySectional Committee and approval of the Electrotechnical Division Council.

This standard was originally published in 2011 and subsequently revised in 2023. The second revision (Superseding of IS 15999 (Part 2/Sec 1: 2023) has been undertaken to align it with the latest version of IEC 60034-2-1: 2024.

On the recommendation of the Rotating Machinery Sectional Committee single numbering has adopted for IEC 60034 series to avoid confusion in use and implementation as experienced by industry, lab and other stakeholders.

This standard is published in various parts. Other parts in this series are:

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| Part 5 | Rotating electrical machines: Part 5 degrees of protection provided by the integral design of rotating electrical machines (IP Code) - Classification |
| Part 8 | Rotating Electrical Machines Part 8 Terminal Markings and Direction of Rotation |
| Part 27 Section 4 | Rotating Electrical Machines Part 27 Winding Insulation of Rotating Electrical Machines Section 4 Measurement of insulation resistance and polarization index |

The text of the IEC Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

1. Wherever the words ‘International Standard’ appears referring to this standard, they should be read as ‘Indian Standard’.
2. Comma (,) has been used as a decimal marker, while in Indian Standards the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to International Standards for which Indian Standards also exists. The corresponding Indian Standards, which are to be substituted, are listed below along with their degree of equivalence for the editions indicated:

|  |  |  |
| --- | --- | --- |
| *International Standard* | *Corresponding Indian Standard* | *Degree of Equivalence* |
| IEC 60027-1, Letter symbols to be used in electrical technology – Part 1: General | IS 3722 (Part 1) : 2023 / IEC 60027-1: 1992 Letter symbols and signs used In electrical technology - Part 1: General (*Second Revision*) | Identical |
| IEC 60034-1: 2022, Rotating electrical machines – Part 1: Rating and performance | IS 15999 (Part 1) : 2021/ IEC 60034-1: 2017 Rotating electrical machines - Part 1 : Rating and performance (Under Revision with latest Identical IEC) | Identical |
| IEC 60034-4-1:2018, Rotating electrical machines – Part 4-1: Methods for determiningelectrically excited synchronous machine quantities from tests | IS 15999 (Part 4/Sec 1) : 2023/ IEC 60034-4-1: 2018 Rotating electrical machines Part 4 Electrically excited synchronous machine quantities Section 1 Test methods (*First Revision*) | Identical |
| IEC 60034-30-1, Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE code) | IS 12615 : 2018 Line operated three phase AC motors (IE Code) "Efficiency classes and performance specification" (*Third Revision*) | Technically Equivalent |
| IEC 60051(all parts), Direct acting indicating analogue electrical measuring instruments and their accessories | IS 1248 (Part 1) : 2021/ IEC 60051-1: 2016 Direct acting indicating analogue electrical measuring instruments and their accessories Part 1: Definitions and general requirements common to all parts (*Fifth Revision*) | Identical |
| IS 1248 (Part 2) : 2021/ IEC 60051-2: 2018 Direct acting indicating analogue electrical measuring instruments and their accessories Part 2: Special requirements for ammeters and voltmeters | Identical |
| IS 1248 (Part 3) : 2021/ IEC 60051-3: 2018 Direct acting indicating analogue electrical measuring instruments and their accessories Part 3: Special requirements for wattmeters and varmeters | Identical |
| IS 1248 (Part 4) : 2021/ IEC 60051-4: 2018 Direct acting indicating analogue electrical measuring instruments and their accessories title Part 4: Special requirements for frequency meters | Identical |
| IS 1248 (Part 5) : 2021/ IEC60051-5: 2018 Direct acting indicating analogue electrical measuring instruments and their accessories Part 5: Special requirements for phase meters power factor meters and synchroscopes | Identical |
| IS 1248 (Part 6) : 2021/ IEC 60051-6:2017 Direct acting indicating analogue electrical measuring instruments and their accessories Part 6: Special requirements for ohmmeters impedance meters and conductance meters | Identical |
| IS 1248 (Part 7) : 2021/ IEC60051-7: 2017 Direct acting indicating analogue electrical measuring instruments and their accessories Part 7: Special requirements for multi-function instruments | Identical |
| IS 1248 (Part 8) : 2021/ IEC 60051-8: 2017 Direct acting indicating analogue electrical measuring instruments and their accessories Part 8: Special requirements for accessories | Identical |
| IS 1248 (Part 9) : 2021/ IEC 60051-9:2019 Direct acting indicating analogue electrical measuring instruments and their accessories Part 9: Recommended test methods | Identical |

The technical committee has reviewed the provisions of the following international standards referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard.

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| *International Standard* | *Title* |
| IEC 60034-19 | Rotating electrical machines – Part 19:Specific test methods for DC machines on conventional and rectifier-fed supplies |
| IEC 60034-29 | Rotating electrical machines – Part 29: Equivalent loading and superposition techniques – Indirect testing to determine temperature rise |

Only English language text has been retained while adopting it in this Indian Standard, and as such the page numbers given here are not the same as in the International Standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.