

IEEE Standard Test Procedure for Single-Phase Induction Motors

IEEE Industry Applications Society

Sponsored by the
Electric Machines Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

IEEE Std 114™-2010
(Revision of
IEEE Std 114-2001)

23 December 2010

IEEE Standard Test Procedure for Single-Phase Induction Motors

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Approved 30 September 2010

IEEE-SA Standards Board

Abstract: Instructions for conducting and reporting the more generally applicable and acceptable test to determine the performance characteristics of single-phase induction motors are covered in this standard.

Keywords: efficiency, IEEE 114, motor test procedure, single-phase induction motors, speed-torque characteristic

The Institute of Electrical and Electronics Engineers, Inc.
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PDF: ISBN 978-0-7381-6478-6 STD97027
Print: ISBN 978-0-7381-6443-4 STDPD97027

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Introduction

This introduction is not part of IEEE Std 114-2010, IEEE Standard Test Procedure for Single-Phase Induction Motors.

This introduction provides some background on the rationale used to develop this standard and is meant to aid in the understanding and usage of this document.

This standard describes laboratory tests conducted to evaluate the performance of certain single-phase induction motors. It is intended for the following:

- Individuals or organizations that use electric motors and purchase electric motors from manufacturers.
- Individuals or organizations that acquire electric motors for resale to other individuals or organizations.
- Individuals or organizations that influence how electric motors are purchased from manufacturers.
- Manufacturers interested in providing high-quality electric motors to the consumer.

This standard is designed to help organizations and individuals:

- Incorporate quality considerations during the design, evaluation, selection, and acceptance of single-phase induction motors for operational use.
- Determine how single-phase induction motors should be evaluated, tested, and accepted for delivery to end users.

This standard is intended to satisfy the following objectives:

- a) Promote consistency among electric motor manufacturers in the performance evaluation of single-phase induction motors.
- b) Provide useful practices for evaluating performance during the design of electric motors.
- c) Provide useful practices for evaluating and qualifying manufacturer capabilities to meet user requirements.
- d) Provide useful practices for evaluating and qualifying manufactured electric motors.
- e) Assist individuals or organizations judging the quality of single-phase induction motors delivered to end users.

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Participants

At the time this standard was submitted to the IEEE-SA Standards Board for approval, the Motors Working Group had the following membership:

Emmanuel B. Agamloh, *Chair*

Joseph E. Adams
Austin H. Bonnett

David Eisenbraun
Dale Friesen
Jim Kinninger

Charles Landy
Ernesto Jorge Wiedenbrug

The following members of the individual balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

William J. Ackerman
Emmanuel Agamloh
Satish Aggarwal
Davide Todaro Boscolo
Manjinder Gill
Randall Groves
Iqbal Husain

Chad Kiger
Jim Kulchisky
G Luri
William McBride
Bansi Patel
Christopher Petrola
Ulrich Pohl

Robert Robinson
Bartien Sayogo
Jeffrey Sisson
James Smith
Jerry Smith
John Wang
Ernesto Jorge Wiedenbrug

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Robert M. Grow, *Chair*
Richard H. Hulett, *Vice Chair*
Steve M. Mills, *Past Chair*
Judith Gorman, *Secretary*

Karen Bartleson
Victor Berman
Ted Burse
Clint Chaplin
Andy Drozd
Alexander Gelman
Jim Hughes

Richard H. Hulett
Young Kyun Kim
Joseph L. Koepfinger*
John Kulick
David J. Law
Hung Ling
Oleg Logvinov
Ted Olsen

Ronald C. Petersen
Thomas Prevost
Jon Walter Rosdahl
Sam Sciacca
Mike Seavey
Curtis Siller
Don Wright

*Member Emeritus

Also included are the following nonvoting IEEE-SA Standards Board liaisons:

Satish Aggarwal, *NRC Representative*
Richard DeBlasio, *DOE Representative*
Michael Janezic, *NIST Representative*

Michelle D. Turner
IEEE Standards Program Manager, Document Development

Patricia Gerdon
IEEE Standards Program Manager, Technical Program Development

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1. Overview

This standard test procedure is divided into 11 Clauses. This overview as well as the scope and purpose of this standard test procedure are presented in Clause 1. References to other standards that are useful in applying this standard test procedure as provided in Clause 2. This standard test procedure covers a broad range of basic models of single-phase induction motors; common types of single-phase motors and the tests that are applicable to each are specified in Clause 3. Requirements for test instrumentation and other general testing facilities are presented in Clause 4. General procedures for electrical, mechanical and temperature measurements are presented in Clause 5. General test procedures and safety requirements are presented in Clause 6. A general discussion of loss is presented in Clause 7. Test methods for determination of motor efficiency and power factor are presented in Clause 8. Methods for determination of other performance are presented in Clause 9. Temperature tests are presented in Clause 10. Miscellaneous tests are described in Clause 11. Typical forms for the reporting the results of routine test, complete test, and a determination of efficiency are provided in Annex A. Bibliographic references are provided in Annex B.

1.1 Scope

This standard covers instructions for conducting and reporting the more generally applicable and acceptable tests to determine the performance characteristics of single-phase induction motors. It is not intended that this standard shall cover all possible tests used in production or tests of a research nature. The standard shall not be interpreted as requiring the making of any or all of the tests described herein in any given transaction.