

# JIS

JAPANESE  
INDUSTRIAL  
STANDARD

Translated and Published by  
Japanese Standards Association

---

---

**JIS C 4213** : 2014

(JEMA)

**Low-voltage three-phase  
squirrel-cage induction motors—  
Low-voltage top runner motor**

---

ICS 29.160.30

Reference number : JIS C 4213 : 2014 (E)

C 4213 : 2014

Date of Establishment: 2014-03-20

Date of Public Notice in Official Gazette: 2014-03-20

Investigated by: Japanese Industrial Standards Committee  
Standards Board

Technical Committee on Electricity Technology

---

JIS C 4213:2014, First English edition published in 2016-12

Translated and published by: Japanese Standards Association  
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

---

In the event of any doubts arising as to the contents,  
the original JIS is to be the final authority.

© JSA 2016

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

KK/AT

PROTECTED BY COPYRIGHT

## Contents

	Page
Introduction.....	1
1 Scope .....	1
2 Normative references .....	2
3 Terms and definitions .....	3
4 Duty .....	5
4.1 Duty .....	5
4.2 Duty types .....	5
5 Rating .....	7
5.1 Rated voltage .....	7
5.2 Rated frequency .....	7
5.3 Rated output .....	8
6 Conditions for installation site .....	8
6.1 General matters .....	8
6.2 Altitude .....	8
6.3 Maximum ambient temperature .....	8
6.4 Minimum ambient temperature .....	8
6.5 Water coolant temperature .....	8
6.6 Storage and transport .....	8
7 Performances .....	8
7.1 Temperature rise .....	8
7.2 Reference coolant .....	11
7.3 Efficiency .....	12
7.4 Withstand voltage .....	15
7.5 Voltage variation and frequency variation during operation .....	16
8 Construction .....	17
8.1 Accessories .....	17
8.2 Cable entrance .....	17
8.3 Earthing terminal .....	17
8.4 Protection method .....	17
9 Dimensions .....	17
10 Test methods .....	21
10.1 Types of test .....	21
10.2 Structure test .....	22
10.3 Resistance value .....	22
10.4 Lock test .....	23

10.5	Temperature rise .....	24
10.6	Determination of efficiency .....	27
10.7	Determination of starting property .....	27
10.8	Overspeed test .....	30
10.9	Noise test .....	31
10.10	Withstand voltage test .....	35
11	Tolerance .....	37
12	Marking .....	38
13	Safety .....	39
Annex JA (informative)	Relation between typical frame number and dimensions, and output .....	40
Annex JB (informative)	Comparison table between JIS and corresponding International Standards .....	49

## **Foreword**

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by The Japan Electrical Manufacturers' Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This **JIS** document is protected by the Copyright Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

# Low-voltage three-phase squirrel-cage induction motors—Low-voltage top runner motor

## Introduction

This Japanese Industrial Standard has been prepared based on the twelfth edition of **IEC 60034-1** published in 2010, the third edition of **IEC 60034-8** published in 2007, Edition 4.1 of **IEC 60034-9** published in 2007, Edition 2.1 of **IEC 60034-12** published in 2007 and the sixth edition of **IEC 60072-1** published in 1991 with some modifications of the technical contents such as the deletion of the specifications relating to inapplicable items.

The portions given sidelines or dotted underlines are the matters in which the contents of the corresponding International Standards have been modified. A list of modifications with the explanations is given in Annex JB. The matters contained in Annex JA are unique contents of **JIS** that are not given in the corresponding International Standards.

## 1 Scope

This Standard specifies the low-voltage top runner motors (hereafter referred to as motors) among the low-voltage three-phase 50 Hz and/or 60 Hz squirrel-cage induction motors shown below. This Standard covers the motors having the ratings of two or more voltages and/or frequencies.

- Rated voltage 600 V or under
- Rated output 0.75 kW or over up to and including 375 kW
- 2, 4 or 6 poles
- Duty type S1 (continuous running duty) or S3 (intermittent periodic duty) having 80 % or more cyclic duration factor
- Commercial power source driven type
- Motors suitable for conditions of installation site specified in clause 6

This Standard also covers the following motors.

- Motors having flange, foot or shaft of special dimensions
- Motors incorporated in geared motors and brake motors irrespective of the shapes of shafts and/or flanges

This Standard does not cover the following motors.

- Motors that are driven exclusively by inverter.
- Motors which are completely integrated into a machine (for example, pump, fan and compressor) therefore which cannot be tested separately from the machine