IEC 60204-32

Edition 3.0 2023-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Safety of machinery – Electrical equipment of machines – Part 32: Requirements for hoisting machines

Sécurité des machines – Équipement électrique des machines – Partie 32: Exigences pour les appareils de levage

IEC 60204-32:2023-07(en-fr)

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CONTENTS

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SAFETY OF MACHINERY – ELECTRICAL EQUIPMENT OF MACHINES –

Part 32: Requirements for hoisting machines

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 60204-32 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects. It is an International Standard.

This third edition cancels and replaces the second edition published in 2008. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) alignment to the IEC 60204-1 sixth edition (2016) especially for:
   – requirements for earthing and bonding;
   – requirements for circuit protection;
   – consideration of use of Power Drive Systems;
   – protective bonding requirements and terminology;
   – requirements pertaining to safe torque off for PDS, emergency stop, and control circuit protection;
   – symbols for actuators of control devices;
b) reference for high voltage electrical equipment;
c) cableless control system requirements;
d) EMC requirements;
e) technical documentation requirements;
f) general updating to current special national conditions, normative standards, and bibliographical references.

The text of this International Standard is based on the following documents:

Draft	Report on voting
44/1000/FDIS	44/1005/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The following differing practices of a less permanent nature exist in the countries indicated below:

4.3.1: The voltage characteristics of electricity supplied by public distribution systems in Europe are given in EN 50160:2010.

5.1: Exception is not allowed (USA).

5.1: TN-C systems are not permitted in low-voltage installations in buildings (Norway).

5.2: Terminals for the connection of the protective earthing conductors may be identified by the colour green, the letters “G” or “GR” or “GRD” or “GND”, or the word “ground” or “grounding”, or with the graphical symbol IEC 60417-519:2002-10 or any combination (USA).

5.3.1: Isolation of the neutral conductor is mandatory in TN-systems (Norway).

6.3.3 b),

13.4.5 b),

18.2.1: TT power systems are not allowed (USA).

6.3.3,

18.2,

Annex A: TN systems are not used. TT systems are the national standard (Japan)

6.3.3 b) The use of residual current protective devices with a rated residual operating current not exceeding 1 A is mandatory in TT systems as a means for fault protection by automatic disconnection of supply (Italy).

7.2.3: Disconnection of the neutral conductor is mandatory in a TN-S system (France).

7.2.3: Third paragraph: distribution of a neutral conductor with an IT system is not allowed (USA and Norway).

7.10: For evaluation of short circuit ratings, the requirements of UL 508A Supplement SB may be used (USA).

8.2.2: See IEC 60364-5-54:2011, Annex E List of notes concerning certain countries. Maximum nominal AC control circuit voltage is 120 V (USA).

9.1.2: Only stranded wires are allowed on machines, except for 0,2 mm^2 solid conductors within enclosures (USA).

12.2: The smallest power circuit conductor allowed on machines is 0,82 mm^2 (AWG 18).

Table 5: Cross-sectional area is specified in NFPA 79 using American Wire Gauge (AWG) (USA). See Annex F.

13.2.2: For the protective conductor, the colour identification GREEN (with or without YELLOW stripes) is used as equivalent to the bicolour combination GREEN-AND YELLOW (USA and Canada).

13.2.3: The colour identification WHITE or GREY is used for earthed neutral conductors instead of the colour identification BLUE (USA and Canada).

15.2.2: First paragraph: Maximum value between conductors 150 V (USA).

15.2.2: Second paragraph, fifth bullet: The full load current rating of lighting circuits does not exceed 15 A (USA).

16.4: Nameplate marking requirements (USA).

A.2.2.2: The permissible maximum value of *RA* is regulated (e.g. when U_0 > 300 V, R_A shall be less than 10 Ω, when U_0 < 300 V, R_A shall be less than 100 Ω, U_0 is the nominal AC line to earth voltage in volts (V) (Japan).

A.2.2.2: The maximum permissible value of R_A is 83 Ω (Netherlands).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This part of IEC 60204 provides requirements and recommendations relating to the electrical equipment of hoisting machines so as to promote

– safety of persons and property;

– consistency of control response;

– ease of operation and maintenance.

It is important that high performance is not obtained at the expense of the essential factors mentioned above.

Figure 1 and Figure 2 have been provided as an aid to understanding the interrelationship of the various elements of a hoisting machine and its associated equipment. Figure 1 is an overall block diagram of a typical material handling system (a group of cranes working together in a coordinated manner) and Figure 2 is a block diagram of a typical crane and associated equipment showing the various elements of the electrical equipment addressed in this document.